F I N A L

NAPL Recovery Construction Completion Report, Quanta Resources Corporation Superfund Site, Edgewater, New Jersey

Prepared for

Honeywell International Inc.

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Contents

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Acronyms and Abbreviations

amsl	above mean sea level
btoc	below top of casing
cP	centipoise
EPA	U.S. Environmental Protection Agency
ft bgs	feet below ground surface
g/mL	grams per milliliter
ISS	in situ solidification/stabilization
N.J.A.C.	New Jersey Administrative Code
NAPL	dense nonaqueous phase liquid
NJDEP	New Jersey Department of Environmental Protection
NZ	NAPL zone
O&M	operations and maintenance
OU	Operable Unit
PID	photoionization detectors
PPE	personal protective equipment
PVC	polyvinyl chloride
RD/RAWP	remedial design and remedial action work plan
ROD	Record of Decision

SECTION 1

Introduction

This construction completion report documents the dense nonaqueous phase liquid (NAPL) recovery system construction activities performed from July 20, 2015, through October 2015 at Operable Unit (OU) 1 of the Quanta Resources Corporation Superfund site, in Edgewater, New Jersey. The construction and startup was performed in accordance with the Remedial Design and Remedial Action Work Plan (RD/RAWP) (CH2M, 2015) that was approved by the U.S. Environmental Protection Agency (EPA) on April 8, 2015. Deviations from the RD/RAWP are detailed in Section 2.9 of this report.

Data collected as part of the initial startup testing have allowed for the determination of appropriate pumping schedules for NAPL recovery wells to be operated and for the establishment of baseline transmissivity values at the new recovery wells. Sentry wells have been installed and will be monitored as specified in the operations and maintenance (O&M) plan portion of the RD/RAWP.

This report summarizes the field construction activities, observations, field data, sample collection, laboratory analytical data, and data calculations. Recommendations for regular NAPL recovery operations and for the location of the additional sentry well are presented.

1.1 Site Background and History

The site is adjacent to the Hudson River, in Bergen County, in northeastern New Jersey. The area of OU1, as defined in the Record of Decision (ROD) (EPA, 2011), is approximately 24 acres and comprises a vacant lot referred to as "the Quanta property," portions of River Road and Gorge Road, and properties and portions of properties surrounding the Quanta property. Surface water and sediment in the Hudson River are designated OU2 and are being investigated as part of an ongoing Remedial Investigation/Feasibility Study that is separate from this response action. Details on the site background are provided in the remedial investigation report (CH2M, 2008). Site background information including stratigraphy and definition of source areas including NAPL zones are provided in the final RDWP (CH2M, 2014a). A depiction of the NAPL zones is included in the RD/RAWP for NAPL recovery (CH2M, 2015, Figure 1-3).

The selected remedy described in the ROD "involves the solidification/stabilization of NAPL and arsenic source areas, capping and institutional controls, coupled with the installation of a groundwater containment remedy, a subaqueous reactive barrier in the Hudson River to mitigate contaminated groundwater releases" (p. 91). For deep NAPL, the ROD (p. 96) requires "[t]reatment of a portion of the Deep NAPL through ISS [in situ solidification/stabilization], passive NAPL collection for other areas of the Deep NAPL, and long-term monitoring." The complete remedy meets the intent of the ROD and will effectively achieve the remedial action objectives for media at the site.

A draft Basis of Design report (CH2M, 2014b) was submitted to EPA on May 30, 2014, and a meeting was held on July 22, 2014, to discuss its contents. Parties at the meeting agreed to look at the potential to accelerate the NAPL recovery portion of the remediation to initiate recovery efforts as soon as possible. Therefore, the RD/RAWP for the NAPL recovery portion of the remedy was prepared separately from and in advance of the RD and RAWP for the remaining portions of the remedy. The RD/RAWP for NAPL recovery was approved by EPA in April 2015, and construction began in July 2015. Remedial design and construction of remaining portions of the remedy other than NAPL recovery will be presented under separate cover.

1.2 Objectives and Design Summary

The purpose of the work discussed below was to create a NAPL recovery system consisting of vertical recovery wells with sumps for in-well NAPL accumulation. The overall objective is to remove the NAPL from the sumps at a recovery-well-specific frequency that maximizes NAPL recovery. Downgradient monitoring

wells will act as test points to assure that the NAPL footprint remains stable and is not migrating, which will be assumed by the absence of recoverable NAPL within these wells.

The bulk of the NAPL, associated with several NAPL zones (NZs), will be addressed through ISS. The areas targeted for ISS are the shallow NZs: NZ-1, NZ-2, NZ-5, and a portion of NZ-3 referred to as the Stacked Area. The selected remedy for the remaining areas of deeper NAPL (portions of NZ-3, NZ-4, and NZ-6) is "passive NAPL collection… and long-term monitoring" (ROD, p. 96):

- "For remaining areas of NZ-3 and NZ-4, free-phase NAPL collection from recovery wells or recovery trenches will be performed, to the extent practicable" (ROD p. 96) and
- "No free-phase NAPL collection is anticipated for NZ-6, because no free-phase liquids have been observed that could be collected. If monitoring of NZ-6 identifies free-phase NAPL in the future, EPA will reevaluate the need for adding this deep NAPL remedy component in NZ-6" (ROD p. 97).

As stated in the final RDWP (CH2M, 2014a), the objective of deep NAPL recovery is to remove, where practicable, NAPL having the potential for future migration. Deep NAPL recovery is neither intended to nor expected to materially improve groundwater quality, due to the site-specific and contaminant-specific factors detailed in the Technical Impracticability Evaluation report (CH2M, 2010a).

The passive NAPL recovery system consists of vertical recovery wells in NZ-3 and NZ-4 with sumps for in-well NAPL accumulation. The basis of design, design details, and O&M plan for the NAPL recovery component of the overall remedy at the site are detailed in the RD/RAWP (CH2M, 2015). In general, the NAPL will be removed using the dedicated pump, at a frequency based on startup testing results and specified in Section 4.1. The results from periodic bail-down tests during O&M will be used to calculate NAPL transmissivity for each recovery well. Using the transmissivity value at each well, gauging data, and other site observations, the progress of each location toward its recovery endpoint will be evaluated on a quarterly basis. Data from deep NAPL recovery operations and monitoring will be evaluated on a regular basis to assess the effectiveness of the recovery system, and documented in annual reports along with any recommendations.

SECTION 2

Project Execution

The NAPL recovery construction was performed in accordance with the RD/RAWP (CH2M, 2015), with the exception of the minor deviations listed in Section 2.9. The work included the installation of four recovery wells and two monitoring wells identified in Section 2.4. These wells were then gauged and, based on gauging results (wells containing NAPL thicknesses which are more than 0.5 feet above the top of the well sump), a subset were selected for NAPL bail-down testing. Bail-down testing was performed to obtain data on the transmissivity of the NAPL to assess the best possible pumping frequency for the NAPL.

CH2M provided oversight for the field operations throughout the course of the field construction activities, which included recovery well installation and development. Details of daily construction activities were documented in a field logbook, and photographs of the various activities were taken throughout the project. The following summarizes field activities from mobilization through demobilization.

2.1 Permit Equivalency

No Coastal Zone Permit equivalency was required for this portion of work. Locations of the recovery and monitoring wells are outside of the jurisdiction of the Coastal Permit Program Rules and the Coastal Zone Management Rules, codified under New Jersey Administrative Code (N.J.A.C.) 7:7 and N.J.A.C. 7:7E, respectively. Construction activities occurred over 500 feet landward of the mean high-water line. Hazardous waste (that is, NAPL collected during NAPL recovery) and hazardous substances (as defined in Spill Compensation and Control Act, New Jersey Statutes Annotated 58:10–23.11) will be stored outside the area of 1 percent chance of flood.

In accordance with the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), a Letter of Interpretation was prepared and submitted to the New Jersey Department of Environmental Protection (NJDEP) on June 26, 2014, indicating that no freshwater wetlands are present onsite. A site visit from NJDEP to confirm those findings was performed on August 26, 2014, and on September 9, 2014, the letter was approved.

2.2 Construction Activities

2.2.1 Mobilization and Site Preparation

The following mobilization and site preparation activities were completed prior to construction:

- **Health and Safety Review.** Health and safety training documentation from all subcontractors was sent to CH2M and reviewed and accepted by the health and safety manager.
- **Access.** Access to the Quanta, 115 River Road, Block 93 South, and iPark properties, necessary for construction and operation of the NAPL recovery system, was obtained.
- **Preconstruction Meeting.** A preconstruction meeting was held on July 20, 2015, to discuss the project schedule and the work activities, conduct initial task coordination with site personnel, and introduce personnel working on the project. A roster of all field personnel, additional contacts, and regulatory contacts was prepared and distributed afterward. Attendees included:
    - **CH2M** – Taylor Salsburg
    - **Hager Richter** – Jose Cambero
    - **Cascade Drilling** – Jon Weeks and Ben Grim
    - **HDR (EPA Oversight Contractor)** - Jiss Philip

- **Site Setup.** Mobilization activities included transporting personnel, equipment, materials, supplies, instruments, and subcontracted services required to implement the necessary actions. CH2M mobilized with the drilling subcontractor, Cascade Drilling, to initiate site preparation on July 20, 2015. This included establishing site controls, such as caution tape, signage, perimeter privacy fencing, and construction barricades for construction safety and security. CH2M-designated space within the fenced area of the Quanta site was used as a staging area for the duration of the field work.
- **Utility Clearance.** Hager Richter was also present onsite on July 20, 2015, to perform a utility search and mark-out. A 5-foot-by 5-foot area around each proposed boring was scanned for the presence of subsurface utilities using a combination of ground penetrating radar, electromagnetic conductance, and magnetics.

2.2.2 Safety Considerations

CH2M and onsite contractors were responsible for complying with Occupational Safety and Health Administration regulations, Honeywell's Health and Safety Program, NJDEP permit equivalents, and CH2M's Health, Safety, and Environment Program. The following specific safety-related activities took place during the field work.

- The HASP was reviewed and signed by all onsite project members
- Health and safety certifications for each onsite person were compiled by the field team leader prior to mobilization
- AHAs were developed for each work task and reviewed with the field personnel before the work was started
- Daily safety meetings were held every morning with all field personnel prior to the commencement of that day's field activities; relevant safety topics were addressed and the health and safety plan was reviewed
- Photoionization detectors (PIDs) and dust detectors were used to monitor the breathing zone of staff collecting and processing any soil samples and in areas of intrusive work
- Level D personal protective equipment (PPE) was used during onsite field activities; steel-toed boots, safety goggles, and nitrile gloves were worn, and TyChem suits and hearing protection were used when necessary
- Fire extinguishers, spill kits, chilled water and Gatorade, and ice were maintained in the area of operations (due to extreme heat during the event)

2.2.3 Recovery and Monitoring Well Installation

Monitoring and recovery wells were installed between July 20 and July 30, 2015, by Cascade Drilling and CH2M after Cascade obtained the requisite well drilling permits from NJDEP. Form As and Form Bs are included in Appendix A. New monitoring and recovery wells are shown with prior existing recovery and monitoring wells on Figure 2-1, 2-2, and 2-3 for NZ-3, NZ-4, and NZ-6, respectively. Figure 2-4 presents a diagram of the typical recovery/monitoring well construction.

Prior to the installation of each new recovery and monitoring well, a soil boring was drilled. Continuous soil cores were collected using a 5-foot long minisonic sampler and logged in the field. Borings were advanced to the depths of the clay or peat layer (that is, the NAPL confining layer) at each location. The soil was screened with a PID. Visual observation was used to verify the depth of the NAPL confining layer into which the monitoring or recovery well sump was set.

Boreholes were generally completed when they reached 6 feet below the surface of the NAPL confining layer. The interface was defined by two criteria, both of which needed to be satisfied: (1) the transition

LEGEND

- SHALLOW NAPL ZONES
- DEEP NAPL ZONES
- OU1 BOUNDARY
- STACKED ZONE
- -15 SURFACE ELEVATION CONTOURS FOR CAPILLARY BARRIER (SILTY CLAY)
- RECOVERY WELL LOCATION
- MONITORING WELL LOCATION

GENERAL SHEET NOTE

1. RECOVERY WELLS RW 3-2, RW 3-3, AND RW 3-4 DO NOT CONTAIN SUFFICIENT NAPL FOR RECOVERY OPERATIONS. THESE WELLS WILL BE GAUGED AS MONITORING WELLS. TW-01 TO BE REHABILITATED FOLLOWING COMPLETION OF IPARK PROPERTY REDEVELOPMENT.

NZ-1
NZ-2
NZ-3
RW3-2
RW3-3
RW3-4
RW3-1
RW3-5
MW-121B
MW-401
MW-400
TW-01
MW-401 TO BE INSTALLED FOLLOWING BUILDING DEMOLITION AND IN SITU SOLIDIFICATION
DOWNWARD SLOPE OF SILTY CLAY
BIT. CONC. PAV'T.
LIGHTLY WOODED
CONC. CURB
CHAIN LINK FNC.
PILE
CONCRETE PAD
THREE STORY BRICK & FRAME BUILDING
16' STORM EASEMENT
72" STORM DRAIN
10 FT. BUILDING SETBACK LINE
EXISTING BUILDING 12,000 SF RETAIL/OFFICE 3,000 SF RESTAURANT
LOADING ZONE
TIMBER PIER IN DISREPAIR
RUINOUS TIMBER PILES
NEW JERSEY STATE RIPARIAN CLAIMS LINE (SEE NOTE 7)
BLOCK 95 TAX LOT 1
BLOCK 96 TAX LOT 3.01

0 30 90
SCALE IN FEET

NO.	DSGN	DATE	DR	REVISION	CHK	APVD	BY	APVD
			L TSENG	PA KARABAN				

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FIGURE 2-1
NZ-3 DEEP NAPL RECOVERY AND MONITORING WELL LAYOUT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE
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DWG
SHEET of

FILENAME: 10-C-R201-11-23-15.dgn PLOT DATE: 2015\11\24 PLOT TIME: 9:11:44 AM

LEGEND

- SHALLOW NAPL ZONES
- DEEP NAPL ZONES
- OU1 BOUNDARY
- RECOVERY WELL LOCATION
- MONITORING WELL LOCATION

NZ-1

NZ-4

MW-123

MW-402 OPERATED AS RECOVERY WELL

MW-402

PROPOSED LOCATION FOR DEEP NAPL MONITORING WELL MW-410A, COLLOCATED WITH TL10.5-10.5

Note: Drawing superceded by Figure 1-2 in the 2015-2016 Annual NAPL Recovery Report (January 2017)

0 30 90
SCALE IN FEET

NO.	DATE	REVISION	BY	APVD
DSGN	L TSENG	DR PA KARABAN	CHK	APVD

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FIGURE 2-2
NZ-4 DEEP NAPL RECOVERY AND MONITORING WELL LAYOUT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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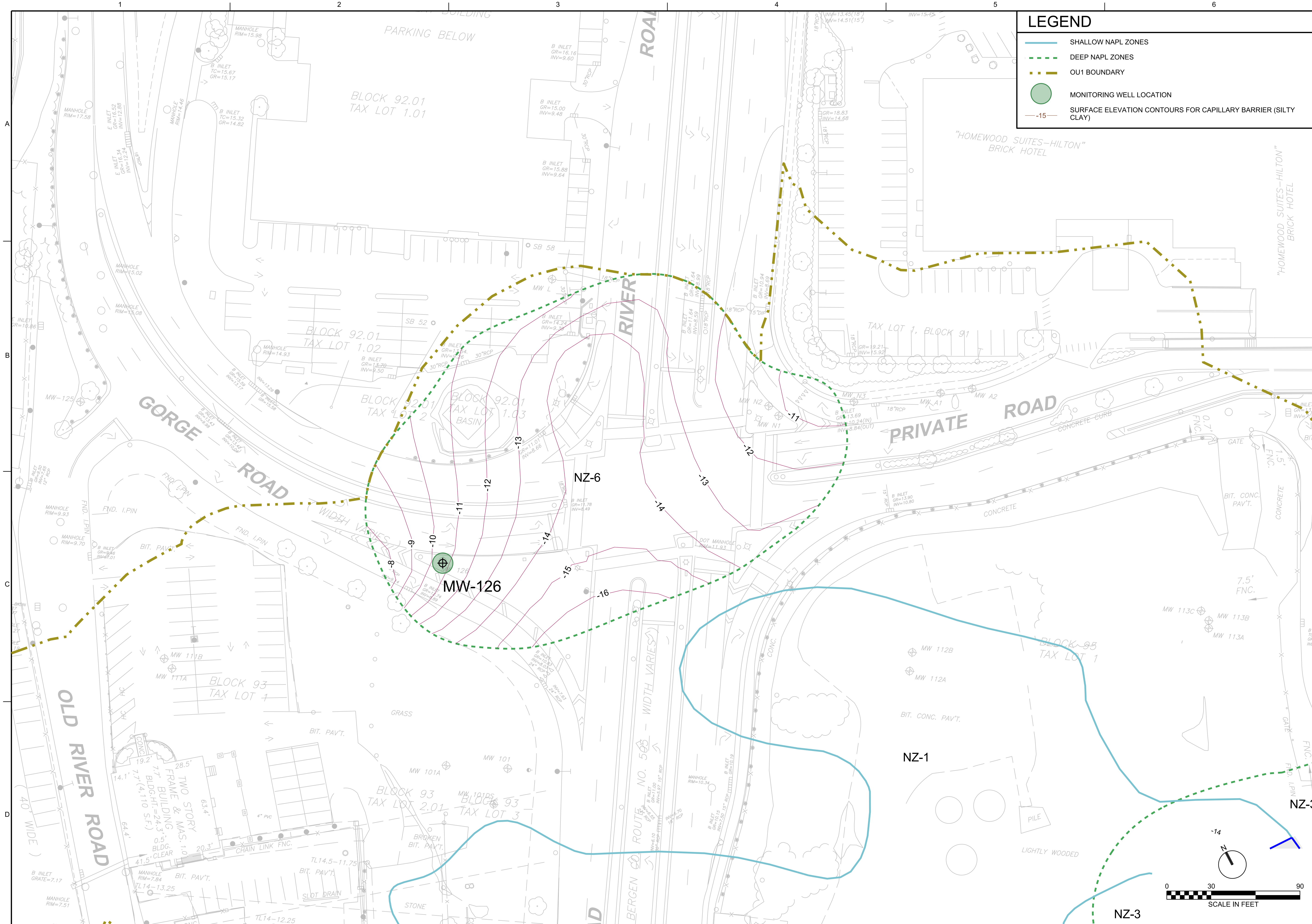
LEGEND
SHALLOW NAPL ZONES
DEEP NAPL ZONES
OU1 BOUNDARY
MONITORING WELL LOCATION
-15
SURFACE ELEVATION CONTOURS FOR CAPILLARY BARRIER (SILTY CLAY)
NZ-6
MW-126
NZ-1
NZ-3
NZ-3
-8
-9
-10
-11
-12
-13
-14
-15
-16
-11
-12
-13
-14
GORGE ROAD
RIVER ROAD
PRIVATE ROAD
OLD RIVER ROAD
BERGEN CO. ROUTE NO. 505 - WIDTH VARIES
BLOCK 92.01 TAX LOT 1.01
BLOCK 92.01 TAX LOT 1.02
BLOCK 92.01 TAX LOT 2
BLOCK 92.01 TAX LOT 1.03
BASIN
BLOCK 93 TAX LOT 1
BLOCK 93 TAX LOT 2.01
BLOCK 93 TAX LOT 3
BLOCK 95 TAX LOT 1
TAX LOT 1, BLOCK 91
"HOMEWOOD SUITES–HILTON" BRICK HOTEL
PARKING BELOW
MW-125
MW 111B
MW 111A
MW 101A
MW 101
MW 101DS
MW 112B
MW 112A
MW 113C
MW 113B
MW 113A
MW N1
MW N2
MW N3
MW A1
MW A2
MW L
TWO STORY FRAME & MAS. BUILDING
CHAIN LINK FNC.
LIGHTLY WOODED
PILE
GRASS
N
0
30
90
SCALE IN FEET

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FIGURE 2-3
NZ-6 DEEP NAPLE MONITORING
WELL LOCATION

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NO.	DATE	REVISION	BY	APVD

DSGN: L TSENG | DR: PA KARABAN | CHK | APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

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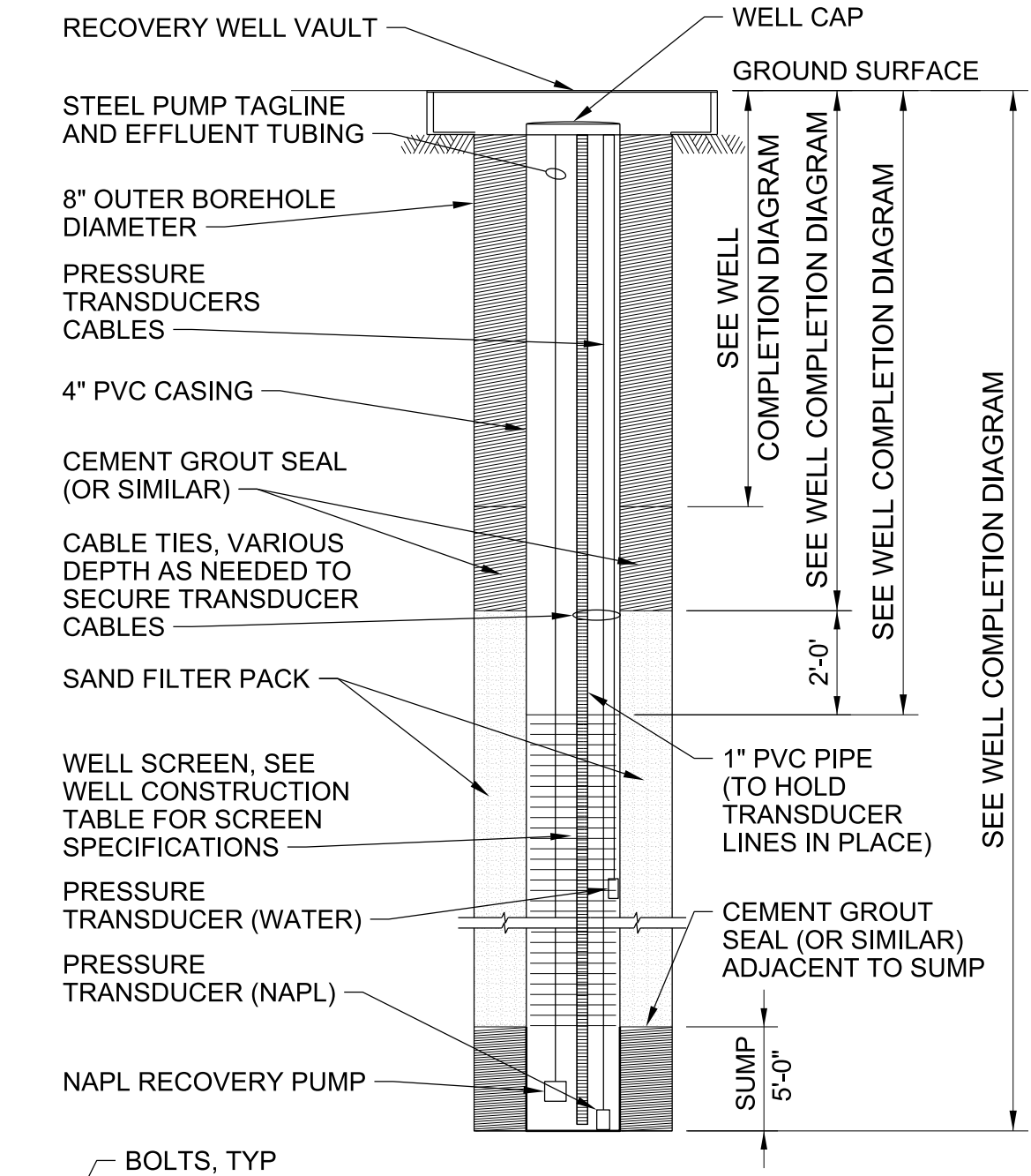
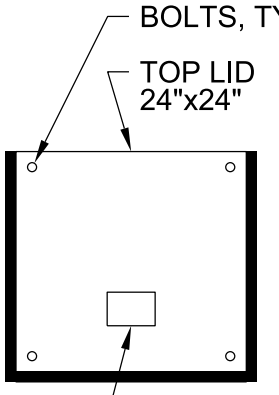
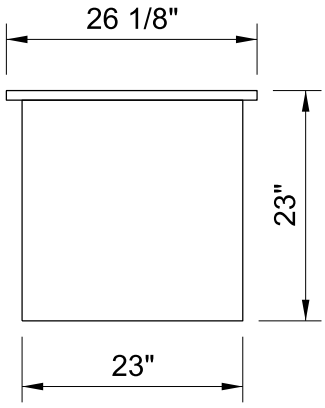




RECOVERY WELL VAULT PLAN



RECOVERY WELL VAULT ELEVATION

FIGURE 2-4
NAPL RECOVERY WELL AND VAULT DETAIL
QUANTA RESOURCES CORPORATION SUPERFUND SITE
Edgewater, New Jersey

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from soils with some NAPL saturation to soil with no NAPL saturation, and (2) the transition from coarser-grain soils (native sand or gravelly fill) to lower permeability grey silty clay or peat layers. Boring logs are attached as Appendix A.

New monitoring and recovery wells were installed within their associated borings generally in accordance with the design presented in the RD/RAWP (CH2M, 2015). Minor design variations are indicated in Section 2.10. Each location was a 4-inch-diameter well screened across the entire interval where deep NAPL was present and the the bottom of the screen interval was set in the top of the confining layer. Continuous slot (wire-wrap) 0.02-inch slot size screens were used at lengths ranging from 5 to 15 feet, and each well was constructed with a 2- or 5-foot sump at the base of the screen that was sealed in cement grout to allow for the storage of NAPL and efficient operation of the passive recovery system. The sump was grouted into place to direct NAPL flows into the well and not into the area around the sump.

Surface completion consisted of a steel construction-traffic-rated flush-mount vault/road box with a steel cover with recessed handle. Four bolts are used to fasten the vault box closed when not in use. The vault box is anchored in the ground by concrete. Well construction diagrams are attached as Appendix A.

2.2.4 Recovery and Monitoring Well Development

After well installation, at least 48 hours elapsed before development activities could begin at each well to allow the grout to set. Cascade Drilling conducted the well development on July 29, 2015 and July 30, 2015. A Waterra Pump was used to surge and purge the wells; two surge blocks were anchored onto the Waterra's rigid poly tubing, one at the base and the other approximately 4 feet above the base. These surge blocks disturb the formation while the Waterra simultaneously purges the well water/NAPL directly into 55-gallon drums. Surging and purging started at the base of the sump and worked upwards to the top of the screen. A minimum of three well volumes were purged from each well, and continued to be surged and purged until turbidity visually cleared. A total of 90 gallons to 128 gallons of NAPL and water was purged from each well and disposed offsite as discussed in Section 2.5.

2.2.5 Deviations from Design

The following list summarizes deviations from scope of work defined in the RD/RAWP:

- Well construction details and borehole depths were adjusted from the RD/RAWP estimates based on field conditions. Actual screen placements are noted in Table 2-1.
- Sumps were grouted into place to direct NAPL flows into the well and not into the area around the sump, rather than using a cementing basket. At MW-400, #00 sand was used to avoid the potential for grout to foul the shorter (5-foot) screen at this location.
- MW-402 is considered a recovery well as opposed to a monitoring well due to the observation of sufficient NAPL in the well to conduct a bail-down test. A new sentry well is planned, as noted in Section 4.
- RW3-2, RW3-3, and RW3-4 are considered deep NAPL monitoring wells since insufficient NAPL has been observed to conduct a bail-down test. In the event that sufficient NAPL enters these wells, a bail-down test will be conducted.
- This construction completion report is being submitted in advance of installation of a new sentry well at NZ-4 so that regular operations and evaluations at the recovery wells may commence. Well construction information for the new sentry well will be included in the quarterly data transmittal following its installation.

Table 2-1. Well Construction Summary

Quanta Resources Corporation Superfund Site

Well ID	Type of Well	Status	Slot Size (inches)	Well Diameter (Inches)	Screen (ft bgs)		Sump Length (ft)	Total Depth (ft bgs)	Lithology in Screen Interval
					Top	Bottom			
RW3-2	Monitoring	New	0.02	4	13	23	5	28	Fine to medium sand
MW-126	Monitoring	Installed in 2008	—	—	—	—	—	—	—
RW3-3	Monitoring	New	0.02	4	12	22	5	27	Fine sand, varved clay at base
RW3-4	Monitoring	New	0.02	4	13	23	5	28	Fine silty sand and fine sand
MW-121B	Monitoring	Installed in 2006	0.02	4	12	22	2	24	Medium/gravelly sand; silty clay at 20 ft bgs
RW3-1 (MW-130B)	Recovery	Installed in 2008	0.02	2	15	25	2	27	Native sand and silty clay
RW3-5	Recovery	New	0.02	4	9	24	5	29	Fine to medium sand; clayey silt at 23 ft bgs
MW-400	Monitoring	New	0.02	4	29	34	2	36	Fine to medium sand; grey, clayey silt at 33.2 ft bgs
MW-401	Monitoring	Planned (installation following full-scale construction)	0.02	4	17	27	5	32	Native sand and silty clay expected
TW-01 [a]	Monitoring	Predesign	0.03	4	17	27	2	29	Unknown; refusal at 6 ft bgs
RW4-1 (MW-123)	Recovery	Installed in 2008	0.02	4	6	16	2	18	Fill and gravelly sand; clayey peat at 15 ft bgs
RW4-2 (MW-402)	Recovery	New	0.02	4	6	16	5	21	Fine to medium sand and gravel; peat at 15 ft bgs
MW-410A	Monitoring	Recommended installation spring 2016	—	—	—	—	—	—	—

[a] TW-01 is currently missing; a construction entrance was placed over this location during redevelopment of the iPark site. See Section 4.2.2 for additional information.

2.3 Gauging and Bail Down Testing

2.3.1 Initial Gauging

Starting one week after development, newly-installed NAPL recovery wells and monitoring wells were gauged approximately weekly for up to 8 weeks depending on well conditions, to determine which wells contained sufficient NAPL to allow for bail-down testing. Data were also reviewed to determine when static conditions were reached; in general, this was defined as three consecutive measurements where NAPL thickness (water/NAPL interface) varied by 10 percent or less. Measurements of NAPL thickness were taken using an oil–water interface probe to determine the depth to NAPL and the total depth of the recovery well, subtracting one from the other to determine the in-well NAPL thickness.

Recovery and monitoring wells were gauged up to seven times between August 5 and October 1, 2015. Gauging data are presented in Table 2-2.

Table 2-2. Initial Monitoring and Recovery Well Gauging Data
Quanta Resources Corporation Superfund Site

Well ID	Date	Measuring Point Elevation (ft amsl)	Total Depth (ft btoc)	Depth to Water (ft btoc)	Water Elevation (ft amsl)	Depth to NAPL (ft btoc)	NAPL Thickness (ft)
NZ-3							
MW-121B	8/5/2015	7.16	23.94	3.67	3.49	23.94	Trace
	8/12/2015	7.16	23.94	3.56	3.60	23.94	Trace
	10/1/2015	7.16	NM	3.64	3.52	23.94	Trace
MW-400	8/5/2015	6.742	35.10	3.29	3.45	—	—
	8/12/2015	6.742	35.10	3.28	3.46	—	—
	8/19/2015	6.742	35.10	3.39	3.35	—	—
	8/26/2015	6.742	35.10	3.48	3.26	—	—
	9/3/2015	6.742	35.15	3.40	3.34	35.15	Trace
	9/11/2015	6.742	35.10	NM	NM	—	—
	10/1/2015	6.742	35.10	3.34	3.40	—	—
RW3-1 (MW-130B)	8/5/2015	6.47	24.95	3.02	3.45	20.71	4.24
	9/2/2015	6.47	24.95*	3.10	3.37	20.49	4.46
	9/16/2015	6.47	NM	NM	NM	20.42	—
	10/1/2015	6.47	24.95	2.95	3.52	21.83	3.12
RW3-2	8/5/2015	5.298	27.12	1.52	3.78	26.64	0.48
	8/12/2015	5.298	27.12	1.44	3.86	26.50	0.62
	8/19/2015	5.298	27.12	1.23	4.07	26.15	0.97
	8/26/2015	5.298	27.12	1.65	3.65	27.12	Trace
	*9/3/2015***	*5.298*	*27.11*	*2.70*	*2.60*	*18.95*	*8.16*

Table 2-2. Initial Monitoring and Recovery Well Gauging Data
Quanta Resources Corporation Superfund Site

Well ID	Date	Measuring Point Elevation (ft amsl)	Total Depth (ft btoc)	Depth to Water (ft btoc)	Water Elevation (ft amsl)	Depth to NAPL (ft btoc)	NAPL Thickness (ft)
	9/11/2015	5.298	27.12	NM	NM	27.12	Trace
	10/1/2015	5.298	NM	1.51	3.79	27.12	Trace
RW3-3	8/5/2015	5.607	25.85	1.86	3.75	—	—
	8/12/2015	5.607	25.85	1.79	3.82	—	—
	8/19/2015	5.607	25.85	1.83	3.78	—	—
	8/26/2015	5.607	25.85	1.98	3.63	—	—
	9/3/2015	5.607	25.75	2.06	3.55	—	—
	10/1/2015	5.607	NM	1.82	3.79	—	—
RW3-4	8/5/2015	6.900	23.10	3.33	3.57	—	—
	8/12/2015	6.900	23.10	3.25	3.65	—	—
	8/19/2015	6.900	23.10	3.30	3.60	—	—
	8/26/2015	6.900	23.10	3.42	3.48	—	—
	9/3/2015	6.900	22.00	3.47	3.43	—	—
	10/1/2015	6.900	NM	3.34	3.56	—	—
RW3-5	8/5/2015	6.435	25.86	2.95	3.49	20.74	5.12
	8/12/2015	6.435	25.86	2.87	3.57	20.30	5.56
	8/19/2015	6.435	25.86	2.86	3.58	20.10	5.76
	8/26/2015	6.435	25.86	3.05	3.39	20.15	5.71
	9/2/2015	6.435	26.70	3.12	3.32	19.98	6.72
	9/3/2015	6.435	26.70	3.07	3.37	25.15	1.55
	9/16/2015	6.435	NM	NM	NM	19.97	6.73
	10/1/2015	6.435	NM	2.93	3.51	19.95	6.75
NZ-4							
RW4-1 (MW-123)	8/5/2015	5.54	17.40	2.89	2.65	11.90	5.50
	9/2/2015	5.54	17.32	2.95	2.59	11.04	6.28
	9/2/2015	5.54	17.32	2.98	2.56	16.27	1.05
	9/3/2015	5.54	17.32	3.00	2.54	15.79	1.53
	9/16/2015	5.54	NM	NM	NM	11.82	5.50
	10/1/2015	5.54	NM	2.68	2.86	11.34	5.98
	8/5/2015	6.159	20.20	3.70	2.46	12.25	7.95

Table 2-2. Initial Monitoring and Recovery Well Gauging Data
Quanta Resources Corporation Superfund Site

Well ID	Date	Measuring Point Elevation (ft amsl)	Total Depth (ft btoc)	Depth to Water (ft btoc)	Water Elevation (ft amsl)	Depth to NAPL (ft btoc)	NAPL Thickness (ft)
RW4-2 (MW-402)	8/12/2015	6.159	20.20	3.75	2.41	12.38	7.82
	8/19/2015	6.159	20.20	3.80	2.36	12.41	7.79
	8/26/2015	6.159	20.20	3.80	2.36	12.40	7.80
	9/2/2015	6.159	20.15	3.54	2.62	11.95	8.20
	9/3/2015	6.159	20.15	3.71	2.45	12.11	8.04
	9/16/2015	6.159	NM	NM	NM	12.10	8.05
	10/1/2015	6.159	NM	3.71	2.45	12.20	7.95
NZ-6							
MW-126	8/12/2015	13.87	19.95	9.40	4.47	—	—

—, NAPL not observed, amsl, above mean sea level; btoc, below top of casing; DNAPL, dense nonaqueous phase liquid; NM, not measured, trace, <0.01 ft thickness or blebs observed on the probe.

*Total depth reading at RW3-1 of 24.30 ft btoc was not used for calculations; prior total depth of 24.95 ft btoc was used.

**September 3, 2015 measurements at RW3-2 are believed to be erroneous.

2.3.2 Initial Bail-down Testing

Gauging results determined which wells contained a thickness of NAPL sufficient for bail-down testing[1]: RW3-1, RW3-5, RW4-1/MW-123, and RW4-2/MW-402. Bail-down test measurements were taken on September 2, 2015 at all four of these wells, and again on October 1, 2015 at RW3-1 and RW4-2/MW-402. Transmissivity calculations were performed in accordance with the RD/RAWP for NAPL recovery (CH2M, 2015), except where noted below.

Depth to water, total well depth, and depth to NAPL were measured with a Solinst, Model 122 oil–water interface probe. Following these measurements, dedicated equipment was prepared for installation into the selected wells. A QED stainless steel Pulse Pump bottom-loading pneumatic pump and two In-Situ Level Troll, Model 500 pressure transducers were used in each well (one at the base of the well within the NAPL column and a second within the water column above the NAPL–water interface) to collect data that would allow for the estimation of in-well NAPL thicknesses over time. Manufacturer's manuals for this equipment is included as Attachment A to this report. Measurements were made so that the pump intake was 12 inches from the bottom of the sump, the deep transducer was placed 9 inches from the bottom of the sump (or approximately 3 inches below the pump intake), and the shallow transducer was 48 inches below the static water table. Both the transducers and the pump were affixed to the 1-inch polyvinyl chloride (PVC) pipe inside the well at their respective distances using zip ties to ensure a limited movement. A schematic showing the typical pressure transducer configuration used during bail-down testing is presented in Figure 2-4).

After it had been determined that the wells had reached static conditions the installation of equipment, and initial bail-down tests was conducted the week of August 31, 2015, at wells RW3-1, RW3-5, RW4-1/MW-123,

[1] NAPL thicknesses which are more than 0.5 feet above the top of the well sump are sufficient for baildown testing.

and RW4-2/MW-402,. Transducers were started, the volume of removable NAPL was calculated, and then NAPL pumping was performed until the top of the measured NAPL was lowered to the pump's intake. The thickness of NAPL was measured periodically after the pump was shut off, as NAPL flowed into the well from the formation and adjacent sand pack.

NAPL and groundwater surface elevations were measured via timed manual measurements with an oil–water interface probe, and also by the in-well pressure transducers that were used to take more-frequent measurements for longer durations than would not be practicable using solely a manual measurement approach. Appendix B summarizes raw results and provides field measurements and graphical representations of the transducer data for RW3-1, RW3-5, RW4-1/MW-123, and MW-402.

The following are the general procedures that were conducted for bail-down testing:

1. Start the transducer data logging
2. Measure the initial depth to groundwater, NAPL thickness, and the total well depth
3. Calculate the volume of removable NAPL in the well and sand pack
4. Record the time pumping starts and stops as indicated on the data logger
5. Remove NAPL using the dedicated QED Pulse Pump, pump the NAPL into 5-gallon buckets to allow accurate measurement of the volume removed, and record the total volume of NAPL removed
6. Immediately following NAPL removal and pump shut-off, measure the depth to NAPL using the interface probe; collect periodic manual measurements of NAPL thickness to verify transducer data
7. Download transducer data during a subsequent gauging/bail-down field event
8. Manage waste as discussed in Section 2.5

Table 2-3 presents the total volume of NAPL removed during the prior pre-design baildown tests and initial baildown test.

Table 2-3. Recovered NAPL Volumes During Baildown Tests
Quanta Resources Corporation Superfund Site

Recovery Well ID	Predesign Baildown Testing (Nov 2012-Jan 2013)	Predesign Baildown Testing (Mar-Apr 2014)	Initial Baildown Test (Sep-Oct 2015)
RW3-1	Average 1.6 gallons per test, 15.75 gallons total	Average 0.7 gallons per test, 6.16 gallons total	0.6 gallons
RW3-5	Not yet installed	Not yet installed	3.75 gallons
RW4-1	Average 4.0 gallons per test, 44.6 gallons total	Average 2.9 gallons per test, 25.9 gallons total	3.7 gallons
RW4-2	Not yet installed	Not yet installed	4.0 gallons

2.3.3 Deviations from Gauging and Baildown Design

The following changes or challenges were documented during the bail-down testing:

- **Gauging outside drop pipe.** Gauging water and NAPL depths through the PVC drop pipe that was installed within the 4-inch recovery wells was demonstrated to be inaccurate in the field. NAPL sticking to the sides of the drop pipe and a delay in equilibration between the drop pipe and the levels in the 4-inch casing were resulting in inaccurate readings. Therefore measurements were taken directly within

the 4-inch casing, and the drop pipe will no longer be used. A drop pipe will not be installed in any future recovery or monitoring wells that may be needed.

- **Insufficient NAPL at planned recovery wells.** At RW3-2, RW3-3, and RW3-4, insufficient NAPL was present to allow bail-down testing.
- **NAPL in a planned monitoring well.** At MW-402 (in NZ-4), NAPL flowed into the monitoring well in sufficient quantities to allow a bail-down test; therefore equipment was installed and a test attempted at this location.
- **MW-130B/RW3-1 manual depth measurements**: At this 2-inch-diameter well, the oil–water interface probe was unable to fit down the well when the pump and two transducers were in place, preventing depth-to-water and depth-to-NAPL readings during the bail-down testing event. On October 1, 2015, the installed equipment was zip-tied to metal rods in an attempt to consolidate equipment within the well and yield more room for measurements. After the consolidation of equipment, a test run was attempted; however, the probe was still unable to fit down the well to the depth of NAPL. As a result, manual measurements are not available for this bail-down test at this location. Historical measurements will need to be used to develop initial operating recommendations for RW3-1. Gauging will be attempted in accordance with the planned O&M schedule. Baildown testing will rely upon transducer data only rather than both transducer data and manual measurements, and these results will be used to determine recommendations for ongoing operations at this well.
- **MW-402 pump failure:** While conducting the September 2, 2015, bail-down test at MW-402, NAPL purging was stopped when NAPL was observed in the airline of the pump, potentially due to the high viscosity of the NAPL. A new pump was installed on October 1, 2015, and a second bail-down test was conducted. The results of the second baildown test are included in Appendix B.

2.4 Sample Collection and Analysis

Samples of both groundwater and NAPL were collected at newly installed recovery wells containing NAPL (RW3-5 and MW-402). Groundwater samples for viscosity and density testing were collected using a bailer prior to the installation of any bail-down test equipment and after recovery/monitoring well development and equilibration of water level and NAPL thickness.

Plastic sheeting was placed around the monitoring wells prior to gauging and sampling. Upon the opening of each well, a PID was used to assess the presence of VOCs in the monitoring well headspace and breathing zone. Depth to water and NAPL thickness were gauged and recorded. No excess water was removed from the wells while groundwater samples were collected, and no purging was required prior to sample collection.

A disposable bailer was used to collect a groundwater sample from above the NAPL–water interface from each of the wells. One wide-mouth 16-oz glass jar was used for each groundwater sample.

One sample of NAPL was collected from each of the newly installed recovery wells. These samples were collected at the time of the first bail-down test by directing the flow of NAPL into the laboratory-supplied wide-mouth 16-oz glass jar for each sample. Care was taken to ensure the sample did not contain any groundwater, only NAPL.

The water and NAPL samples were sent to CH2M's Applied Sciences Laboratory for measurement of viscosity (ASTM D445) and specific-gravity and density (ASTM D1217) at three temperatures (50°, 70°, and 100°F).

At MW-402, the initial NAPL sample was an emulsion of NAPL and water. The ratio was approximately 50/50 NAPL to water. A centrifuge was used to separate the phases and isolate the NAPL. The separated MW-402 NAPL phase (MW-402-NAPL) was then analyzed for specific gravity, density, and viscosity.

Results are presented in Table 2-4, which includes prior results for MW-123 and MW-130B/RW3-1 for reference:

Table 2-4. NAPL and Groundwater Physical Properties at Recovery Wells
Quanta Resources Corporation Superfund Site

Sample Name	Matrix	Temperature (°F)	Specific Gravity	Density (g/mL)	Viscosity [a] (cP)
RW3-5-GW	Water	50	1.00	1.00	1.14
		70	1.00	1.00	1.08
		100	1.00	0.99	0.87
MW-402-GW	Water	50	1.01	1.01	1.23
		70	1.00	1.00	1.13
		101	0.99	0.98	0.84
RW3-5-NAPL	NAPL	50	1.06	1.06	7.59
		70	1.05	1.05	5.00
		100	1.05	1.04	3.63
MW-402-NAPL	NAPL	50	1.11	1.11	267
		70	1.11	1.11	110
		100	1.11	1.10	25.3
MW-402-Emulsion	NAPL	50	1.01	1.01	35.3
		70	1.00	1.00	7.51
		100	0.99	0.99	2.38
Previous Results (2013)					
MW123	Water	50	0.99	0.99	1.06
		70.9	0.98	0.98	1.05
		100	0.97	0.96	0.89
MW130B	Water	50	1.03	1.03	1.13
		70.9	1.01	1.01	1.08
		100	1.00	0.99	0.95
MW123B-NP	NAPL	50	1.11	1.11	522
		70.9	1.11	1.11	244
		100	1.11	1.10	83.3
MW130B-NP	NAPL	50	1.06	1.06	15.4
		70.9	1.06	1.06	14.2
		100	1.06	1.05	12.2

Table 2-4. NAPL and Groundwater Physical Properties at Recovery Wells
Quanta Resources Corporation Superfund Site

Sample Name	Matrix	Temperature (°F)	Specific Gravity	Density (g/mL)	Viscosity [a] (cP)

g/mL, grams per milliliter; cP, centipoise.
Density and specific gravity measured by ASTM D1217.
[a] Groundwater viscosity was measured by ASTM D445 with a glass viscometer. NAPL viscosity was measured with a Brookfield rotational viscometer.

The full analytical deliverables report can be found in Appendix C.

2.5 Waste Management

Waste generated was managed as described in the waste management plan (CH2M, 2013, Appendix C). A log of transportation and disposal of the wastes generated from the site is provided in Attachment A-6 including copies of waste disposal profiles, manifests and weight tickets.

Remediation waste was containerized in United Nations–approved 55-gallon, open-top steel drums suitable for transport in accordance with the U.S. Department of Transportation regulations. Drums were labeled with the type of media contained, location of its origin, and date that the waste was generated. Hazardous waste (that is, NAPL and NAPL-impacted waste) was staged outside the flood plain within a Conex box located at the north entrance to the Quanta property. Nonhazardous drums were staged on the Quanta property in a fenced area.

The following waste streams were generated during treatment activities:

- Nonhazardous drilling cuttings and drilling fluids/mud: excess soil (20 drums transported by EQ Northeast to Michigan Disposal Waste Treatment, in Belleville, Michigan) and drilling fluids (2 drums transported by EQ Northeast to EQ Detroit, in Detroit, Michigan).
- Development water and decontamination water containing NAPL were placed in 14 drums and a sample analyzed for offsite disposal. The drums of hazardous water were then transported by EQ Northeast to EQ Detroit, in Detroit, Michigan on October 19, 2015. Analytical results are included in Appendix D.
- General refuse and PPE: PPE with the visual observation of NAPL was placed in drums for offsite disposal. Waste not in contact with NAPL or contaminated media was bagged and put in an onsite waste bin for offsite nonhazardous waste disposal.

All wastes were transported and disposed of in accordance with all applicable federal, state, and local waste management regulations. Waste characterization results and disposal manifests are provided in Appendix D.

SECTION 3

Data Evaluation

Boring logs, well construction details, field gauging results, bail-down test manual measurements, and transducer data were reviewed and evaluated. The results in this section provide the baseline conditions against which subsequent measurements during regular operations will be compared, and allow development of recommendations for O&M activities.

Specific-gravity results were used in the transmissivity calculations for each new recovery well. Specific-gravity data were collected during the predesign investigation for MW-123/RW4-1 and RW3-1 and were used in the calculation of transmissivity at these existing recovery wells. Data from MW-123/RW4-1, MW-130B/RW3-1, and new recovery wells RW3-5 and MW-402/RW4-2 were evaluated to determine the transmissivity of NAPL at each of these locations using methods described in the ASTM standard and modified for DNAPL:

- Bouwer and Rice (1976)
- Cooper and Jacob (1946)
- Cooper et al. (1967)
- Theim Steady State equation

Appendix B includes for each evaluated recovery well a page with the model inputs, including the first several rows of data used in the calculations, figures used to evaluate the transducer data and determine various input parameters for the methods, and summary pages for each of the Bouwer and Rice (1976), Cooper and Jacob (1946), and Cooper et al. (1967) methods. The model input/summary pages present the transmissivity value resulting from each of the three methods, which are also summarized in Table 3-1. Transmissivity could not be calculated at RW3-1 during the startup period due to insufficient space for accurate manual gauging in the 2-inch monitoring well, and a malfunction in the transducer; prior results are reported.

Table 3-1. Baseline Transmissivity Values
Quanta Resources Corporation Superfund Site

	Transmissivity (ft^2/day)			
Recovery Well ID	**Bouwer and Rice**	**Cooper and Jacob**	**Cooper et al.**	**Theim**
RW3-1[a]	0.06	0.09	0.06	N/A
RW3-5	0.33	1.3	0.6	1.2
RW4-1	0.08	0.12	0.07	0.15
RW4-2	14	22	10	28

[a] Values shown for RW3-1 (MW-130B) represent measurements from pre-design investigation testing in March 2014. Results for RW4-2 may represent borehole recharge.

The ITRC (2009) document "Evaluating LNAPL Remedial Technologies for Achieving Project Goals" suggests that potential thresholds for transmissivity using recovery technologies range from 0.1 to 0.8 ft^2/day[2]. For DNAPL the hydraulic recovery endpoint is likely also within this range.

[2] ITRC LNAPL team members' experience indicates that hydraulic or pneumatic recovery systems can practically reduce transmissivity to values between 0.1 and 0.8 ft^2/day.

SECTION 4

Recommendations

4.1 Operating Recommendations

Table 4-1 below presents observations made during initial gauging and bail down testing relevant to the selection of an initial pumping frequency and baseline conditions for each recovery well.

Table 4-1. Recommended Operating Conditions
Quanta Resources Corporation Superfund Site

Recovery Well ID	Recovery	Planned First Quarter Pumping Frequency	Notes
RW3-1[a]	Returns to static conditions in 1 to 8 days during pre-design investigations. Low baseline transmissivity measured during pre-design investigation (0.06 to 0.09 ft^2/day).	Weekly	Recommend reinstalling equipment; attempt to improve transducer function to obtain more recent transmissivity measurement during operations.
RW3-5	Returns to static conditions after approximately 5 days.	Weekly	
RW4-1	Returns to static conditions after approximately two weeks.	Weekly	Based on the recovery rate remove NAPL within casing and sump weekly. Measured transmissivity of 0.02 to 0.24 ft^2/day or less is lower than all values measured in 2012. Evaluate for trends during subsequent baildown tests.
RW4-2	Returns to static conditions within hours	Weekly; consider daily pumping for a set period during operations if these conditions persist.	

[a] Two baildown tests were attempted at RW3-1 but failed to yield usable data to determine transmissivity. Additional attempts to gain a useable baildown test data will occur during ongoing operations, however at this time prior data is being used as a baseline to establish an initial pumping frequency.

The recommended pumping frequencies are based on the most recent successful bail-down test at each location. Subsequent tests may result in modification to these recommended frequencies; changes to pumping frequency will be discussed with EPA prior to modification of the schedule.

4.2 Deep NAPL Monitoring Wells

Downgradient deep NAPL monitoring wells provide data to demonstrate that the NAPL zones are stable. In NZ-6, MW-126 is used to confirm the continued lack of recoverable NAPL in this NAPL Zone. In NZ-3, the following wells are currently being used as sentries[3]: RW3-2, RW3-3, RW3-4, MW-121B, and MW-400. Sentry well TW-01 in NZ-3 cannot be located at this time, and may require rehabilitation as discussed below. At NZ-4, sufficient NAPL entered planned sentry well MW-402, therefore this well is being used as a recovery well. A new sentry well is proposed, as described in the following subsection.

[3] RW3-2, RW3-3, and RW3-4 were planned as recovery wells but do not contain sufficient NAPL to conduct a bail-down test (i.e., 0.5 ft of thickness above the top of the sump), therefore they are being used as sentry wells. If sufficient NAPL enters the well, a bail-down test will be conducted and the well(s) will be operated as recovery wells.

Water level and NAPL gauging will be conducted within the 4-inch (or 2-inch) well casing rather than through a drop pipe, based on challenges during field startup with inaccurate readings within the drop pipe. Gauging at the sentry wells is recommended on a standing monthly basis, rather than at each pumping event. This frequency is more in line with the pace at which NAPL conditions in the subsurface are likely to change and will allow the field teams to spend more time pumping at the recovery wells.

4.2.1 TW-01 Rehabilitation

NZ-3 sentry well TW-01 was buried beneath a construction entrance for a new building on the iPark property, without notification to Honeywell. It is recommended that following completion of construction, a utility locate firm be engaged to attempt to locate the monitoring well for rehabilitation. If the well cannot be located, a replacement sentry well would be installed as close to the original location as possible.

4.2.2 NZ-4 Sentry Well Construction

NAPL was observed at the newly-installed location MW-402, downgradient of recovery well RW4-1/MW-123. MW-402 was intended to serve as a sentry well for NZ-4. A bail-down test was conducted as described in this report, and MW-402 will be operated as a recovery well. A new sentry well is proposed at the location indicated on Figure 2-2. NAPL movement from the MW-123 and MW-402 areas will be controlled by the surface of the capillary barrier in this area which is represented by the top of a clayey peat layer starting at -9 ft amsl at MW-123 and observed at -15 ft amsl at MW-402. Based on the slope of this layer in the southerly direction, this monitoring well will be located to the south on the same side of River Road, collocated with prior TarGOST boring TL10.5-10.5.

Well installation will be performed in accordance with the design presented in the RD/RAWP for NAPL recovery (CH2M, 2015). As defined within the previously approved work plan, the screen depth will be selected in the field based upon the observed depth of a NAPL confining layer, expected to be either clayey peat or silty clay. A 5-foot sump will be installed below the screen.

Honeywell proposes installing this monitoring well during the mobilization for the monitoring wells recently approved for installation at the iPark peninsula, if not before, and will provide EPA with a two-week notice on mobilization.

4.3 O&M and Reporting Schedule

As detailed in the RD/RAWP (CH2M, 2015), the following three conditions will be evaluated to determine whether a specific recovery location has achieved its operational end point:

- Confirmation of stability
- Transmissivity reduced to below 0.8 square feet per day (ft^2/day)
- Asymptotic recovery conditions

Gauging and transmissivity data collected during the first year of O&M will be transmitted to EPA quarterly following bail-down testing, and a summary report will be prepared following four quarters of testing. Regular pumping operations commenced on November 4, 2015 with oversight by HDR, following evaluation of startup testing results. Table 4-2 presents the proposed data collection and reporting schedule for the first year of operations.

Table 4-2. Operations Schedule

Quanta Resources Corporation Superfund Site

O&M Period	Gauging/Pumping Frequency	Bail-down Test	Reporting
Nov. 2015 through Jan. 2016	RW3-1 – Weekly pumping RW3-5 – Weekly pumping RW4-1 – Weekly pumping RW4-2 – Weekly pumping Sentry Wells – Monthly Gauging	Bail-down late January, transducer data collection mid-February	Data transmittal and recommendations for next quarter pumping/gauging frequency - March
Feb.–April 2016	RW3-1 – Weekly pumping RW3-5 – Weekly pumping RW4-1 – Weekly pumping RW4-2 – Weekly pumping Sentry Wells – Monthly Gauging	Bail-down late April, transducer data collection mid-May	Data transmittal and recommendations for next quarter pumping/gauging frequency - -June
May–July 2016	RW3-1 – Weekly pumping RW3-5 – Weekly pumping RW4-1 – Weekly pumping RW4-2 – Weekly pumping Sentry Wells – Monthly Gauging	Bail-down late July, transducer data collection mid-August	Data transmittal and recommendations for next quarter pumping/gauging frequency - September
Aug.–Oct. 2016	RW3-1 – Weekly pumping RW3-5 – Weekly pumping RW4-1 – Weekly pumping RW4-2 – Weekly pumping Sentry Wells – Monthly Gauging	Bail-down late October, transducer data collection mid-November	Annual report with evaluation of progress toward recovery endpoint and recommendations for ongoing operations - December

SECTION 5

References

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Appendix A
Boring Logs and Well Construction Details

BORING LOG

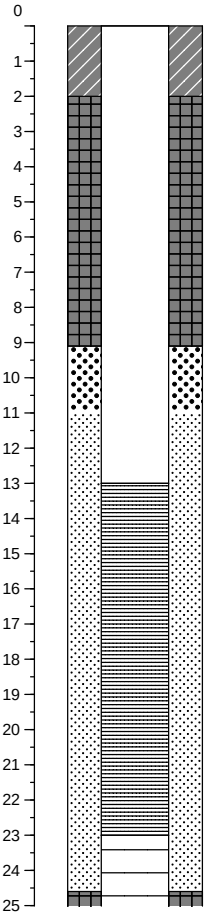
BORING/WELL ID: RW 3-2

SHEET 1 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 6.3 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 28.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/21/2015
FINISH DATE: 07/21/2015
NORTHING: 718743.20 **EASTING:** 633171.06
APPROX. DEPTH TO WATER: 3.0 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
0									
	1 (0-5 ft.)		N/A	4.3/5.0	1.6		ORGANICS, SILT, and SAND, dry, loose, subangular gravel, odor present.		
					12.7	5	Fine SILTY SAND, brown, moist, black product, sheen present.		SM
					88.2		FILL, brick and subangular gravel, saturated with NAPL, low viscosity, black product and sheen throughout.		GW
					154				
					244				
5	2 (5-10 ft.)		N/A	4.6/5.0	260	0			
					294		Fine SAND and SILT (meadow mat), moist, some clay, moderate plasticity, cohesive, fibrous roots present.		ML
					130		Fine SAND, brown 7.5YR 4/2 with gray staining, wet, trace silt, trace subrounded gravel.		SM
					47.0				
10							No recovery.		
	3 (10-15 ft.)		N/A	5.0/5.0	4.7	-5	Fine to medium SAND, wet, trace silt, trace subrounded gravel, little product, sheen present, reduced product toward 15 ft. bgs.		SM
					4.4				
					9.2				
					4.9				
					33.9				
15	4 (15-20 ft.)		N/A	4.8/5.0	18.2	-10	Fine to medium SAND, dark brown 7.5YR 3/2, saturated with low viscosity black product, well graded, trace coarse sand, increased amount of product with depth (21.0 to 22.8 ft. bgs).		SM
					16.7				
					14.9				
					24.1				
20	5 (20-25 ft.)		N/A	5.0/5.0	204	-15			
					249				
					257		SILTY CLAY, light brown 7YR 3/2, moist, moderately soft.		CL
					1.2				
25									

WELL CONSTRUCTION



LEGEND:
msl = mean sea level
bgs = below ground surface
ND = not detected
NM = not measured
N/A = not applicable

SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

BORING LOG

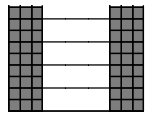
BORING/WELL ID: RW 3-2

SHEET 2 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 6.3 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 28.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/21/2015
FINISH DATE: 07/21/2015
NORTHING: 718743.20 **EASTING:** 633171.06
APPROX. DEPTH TO WATER: 3.0 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
25									
	6 (25-28 ft.)		N/A	3.0/3.0	0.2	-20	SILTY CLAY, light brown 7YR 3/2, moist, moderately soft.		CL
							Bottom of boring @ 28.0 ft. bgs.		
30						-25			
35						-30			
40						-35			
45						-40			
50									

WELL CONSTRUCTION



LEGEND:
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bgs = below ground surface
ND = not detected
NM = not measured
N/A = not applicable

SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

BORING LOG

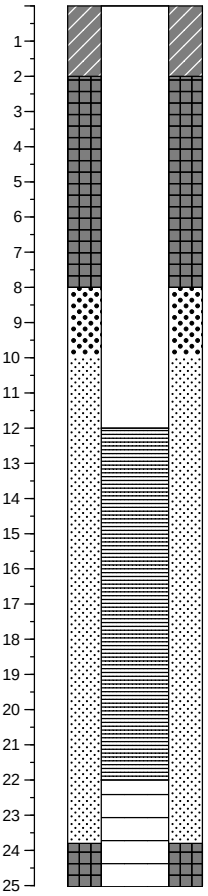
BORING/WELL ID: RW 3-3

SHEET 1 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 6.4 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 27.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/21/2015
FINISH DATE: 07/21/2015
NORTHING: 718698.64 **EASTING:** 633247.76
APPROX. DEPTH TO WATER: 4.5 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
0							SOILS: TYPE, color, moisture, density/consistency, secondary structure. ROCK: rock type, hardness, major mineral types, color, weathering, and degree of fracturing		
	1 (0-5 ft.)		N/A	5.0/5.0	0.0		Fine to medium SAND, light brown, dry.		SM
					4.2	5	SILTY SAND and GRAVEL, dark brown to black, dry to moist, angular gravel, brick.		SM
					12.4				SM
					24.8		Medium SAND and fine GRAVEL, dark brown to stained black, moist, odor present.		GW
5	2 (5-10 ft.)		N/A	5.0/5.0	48.2		Fine to medium SAND with GRAVEL, brown with black staining, moist, subrounded/subangular gravel, odor present, black product (honey), semi-solid pitch tar at 4.0 ft. bgs, sheen starts at 3.2 ft. bgs.		
					80.1				
					144	0	Fine SAND and SILT (meadow mat), moist, some clay, moderate plasticity, cohesive, fibrous roots present.		ML
					148		Fine SAND, very dark grayish brown 10YR 3/2, wet, some angular gravel, little to no silt with depth, heavy sheen, little product.		SM
					98.1				
10	3 (10-15 ft.)		N/A	5.0/5.0	101.9				
					77.4		Fine to medium SAND, brown 10YR 4/3, wet, trace subrounded gravel, odor present, pockets of black product.		SM
					14.8	-5	Fine SAND, brown 10YR 4/3, gray staining from 3.0 to 3.7 ft. bgs, saturated, trace silt, intermittent banded pockets of product, fewer pockets of product from 15.0 to 18.0 ft. bgs, sheen present throughout and more prominent from 18.0 to 20.5 ft. bgs.		SM
					28.8				
					42.7				
15	4 (15-18 ft.)		N/A	3.0/3.0	98.4				
					90.8	-10			
					14.2				
	5A (18-21 ft.)		N/A	3.0/3.0	28.3				
					24.1				
20					68.2				
					65.4		Varved CLAY, brown 7.5YR 4/4, orange banding, moist, firm, plastic, pockets of product. From 21.0 to 22.0 ft. bgs: more fine sand lenses and free black product within lenses.		CL
	5B (21-26 ft.)		N/A	5.0/5.0	88.2	-15			
					80.9		SILTY CLAY with fine SAND, pockets with black product and fine laminations. From 25.0 to 27.0 ft. bgs: no lenses or product. 1-foot interval to reach depth of 27 ft. bgs.		CL
					214				
25					32.2				

WELL CONSTRUCTION



LEGEND:
msl = mean sea level
bgs = below ground surface
ND = not detected
NM = not measured
N/A = not applicable

SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

BORING LOG

BORING/WELL ID: RW 3-3

SHEET 2 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 6.4 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 27.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/21/2015
FINISH DATE: 07/21/2015
NORTHING: 718698.64 **EASTING:** 633247.76
APPROX. DEPTH TO WATER: 4.5 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL	WELL CONSTRUCTION
25					18.1	-20				
	5C (26-27 ft.)		N/A	1.0/1.0	24.9		Bottom of boring @ 27.0 ft. bgs.			
					0.5					
30					0.1	-25				
35						-30				
40						-35				
45						-40				
50										

LEGEND:
msl = mean sea level
bgs = below ground surface
ND = not detected
NM = not measured
N/A = not applicable

SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

BORING LOG

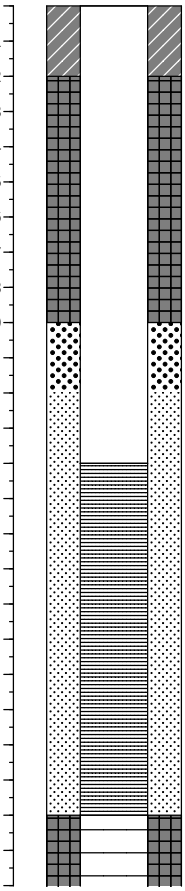
BORING/WELL ID: RW 3-4

SHEET 1 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 8.0 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 28.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/22/2015
FINISH DATE: 07/22/2015
NORTHING: 718488.00 **EASTING:** 633227.00
APPROX. DEPTH TO WATER: 3.8 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
0									
	1 (0-5 ft.)		N/A	3.2/5.0	2.5		CONCRETE.		
					4.6		SILT with fine to medium SAND and GRAVEL, very dark gray 7.5YR 3/1, moist to saturated at 3.8 ft. bgs, loose, angular to subangular gravel, brick fragments up to 3 inches. Starting at 5.0 ft. bgs: increased silt content to 6.3 ft. bgs, sheen, little free product, odor present.		GW
					3.2	5			
5					3.0				
	2 (5-10 ft.)		N/A	4.7/5.0	24.5		SILT and CLAY, very dark gray 7.5YR 3/1, little fine sand and organics, moist to wet, moderately soft, cohesive, low plasticity, sheen present.		ML-CL
					135				
					48.2	0	Fine to medium SAND, brown 7.5YR 4/4, wet, little silt, silt decreases with depth to only fine to medium sand at 7.8 ft. bgs, medium density, odor, little sheen staining, no product noted.		SM
					1124				
					1208				
10	3 (10-15 ft.)		N/A	5.0/5.0	125				
					134				
					140	-5			
					12.2		Fine SAND and SILT, black 7.5YR 2.5/1, little medium sand, dense, stained.		SM
					10.1				
15	4 (15-20 ft.)		N/A	5.0/5.0	16.4		Fine SAND, black 7.5YR 2.5/1, little silt, trace medium sand, sheen and odor present throughout, increased product with depth, free product present from 21.4 to 22.5 ft. bgs.		SM
					12.7				
					10.1	-10			
					23.6				
20	5 (20-25 ft.)		N/A	5.0/5.0	61.3				
					452				
					724				
					1209	-15	SILTY CLAY, orange/gray mottling 7.5YR 5/5, low plasticity, trace product and sheen.		CL
					104				
25					48.2				

WELL CONSTRUCTION



LEGEND:
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NM = not measured
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SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

BORING LOG

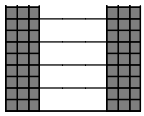
BORING/WELL ID: RW 3-4

SHEET 2 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 8.0 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 28.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/22/2015
FINISH DATE: 07/22/2015
NORTHING: 718488.00 **EASTING:** 633227.00
APPROX. DEPTH TO WATER: 3.8 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
25									
	6 (25-28 ft.)		N/A	3.0/5.0	4.4 3.2 1.8	-20	SILTY CLAY, orange/gray mottling 7.5YR 5/5, trace inclusions of fine sand (stained black 7.5YR 3/1) with sheen.		CL
							Bottom of boring @ 28.0 ft. bgs.		
30						-25			
35						-30			
40						-35			
45						-40			
50									

WELL CONSTRUCTION



LEGEND:
msl = mean sea level
bgs = below ground surface
ND = not detected
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N/A = not applicable

SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
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9-15: stiff
16-30: very stiff
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PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

BORING LOG

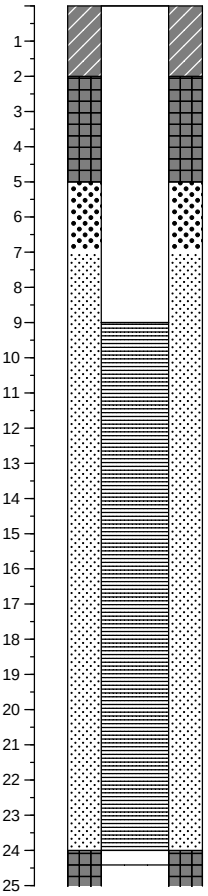
BORING/WELL ID: RW 3-5

SHEET 1 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 7.4 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 29.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/23/2015
FINISH DATE: 07/23/2015
NORTHING: 718428.49 **EASTING:** 633131.11
APPROX. DEPTH TO WATER: 4.0 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
0									
	1 (0-4 ft.)		N/A	4.0/4.0	0.0		CONCRETE.		
					0.0		SILT, fine to coarse SAND and GRAVEL, brown 7.5YR 4/3, moist, loose, subangular to subrounded gravel, brick fragments present.		GW
					0.0	5			
					0.0		Fine to medium SAND and SILT, very dark gray 7.5 YR 3/1, some subrounded gravel, moist, loose to medium density, organics.		SW-ML
5	2 (4-7 ft.)		N/A	0.0/3.0			CONCRETE, not bagged (4.0 to 7.0 ft. bgs).		
	3 (7-10 ft.)		N/A	2.3/5.0	0.0	0			
					187		Fine to medium SAND, black 7.5YR 2.5/1, wet, trace silt, organics from 8.0 to 10.0 ft. bgs, little product, sheen throughout, strong odor present. From 20.0 to 23.1 ft. bgs: increased product with depth, free product prevalent from 22.5 to 23.1 ft. bgs.		SW
10	4 (10-15 ft.)		N/A	5.0/5.0	228				
					327	-5			
					460				
					372				
15	5 (15-20 ft.)		N/A	5.0/5.0	325				
					278				
					308	-10			
					318				
					301				
20	6 (20-25 ft.)		N/A	5.0/5.0	389				
					372				
					407	-15			
					520		Varved CLAYEY SILT, light yellowish (olive) brown 2.5Y 6/3, becomes gray with depth, non-plastic, firm, pockets of fine black sand with sheen.		ML
25					20.9				

WELL CONSTRUCTION



LEGEND:
msl = mean sea level
bgs = below ground surface
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SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
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SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

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0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

BORING LOG

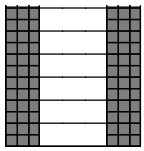
BORING/WELL ID: RW 3-5

SHEET 2 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 7.4 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 29.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/23/2015
FINISH DATE: 07/23/2015
NORTHING: 718428.49 **EASTING:** 633131.11
APPROX. DEPTH TO WATER: 4.0 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
25									
	7 (25-29 ft.)		N/A	4.0/5.0	12.8		Varved CLAYEY SILT, light yellowish (olive) brown 2.5Y 6/3, becomes gray with depth, non-plastic, firm, no sheen or product observed.		ML
					18.7				ML
					7.9	-20	Varved CLAYEY SILT, reddish brown 2.5YR 4/3, firm, no sheen or product observed.		
					7.1				
30							Bottom of boring @ 29.0 ft. bgs.		
						-25			
35									
						-30			
40									
						-35			
45									
						-40			
50									

WELL CONSTRUCTION



LEGEND:
msl = mean sea level
bgs = below ground surface
ND = not detected
NM = not measured
N/A = not applicable

SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

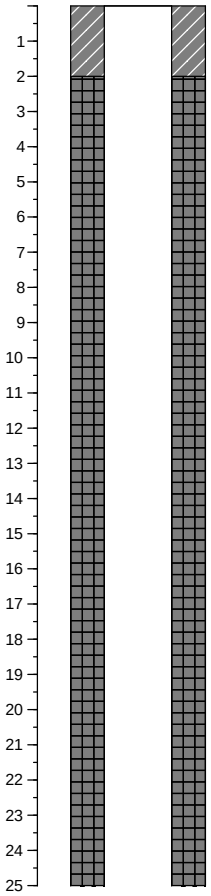
BORING LOG

BORING/WELL ID: MW-400

PROJECT NAME: Quanta
SURFACE ELEVATION: 7.7 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 39.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/25/2015
FINISH DATE: 07/25/2015
NORTHING: 718353.75 **EASTING:** 633201.32
APPROX. DEPTH TO WATER:

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
0									
	1 (0-5 ft.)		N/A	5.0/5.0	0.0		PAVEMENT.		
					0.0		SANDY GRAVEL (fill), dark brown, dry, loose.		GW
					0.4	5	CONCRETE.		
					1.3				
5					2.4				
	2 (5-10 ft.)		N/A	3.5/5.0	1.1		Fine to coarse GRAVELLY SAND, black 7.5YR 2/1, saturated, subrounded to subangular gravel, organics, wood and fractured rock, odor present.		SP
					44.3				
					30.1	0			
					12.3				
10					14.9				
	3 (10-15 ft.)		N/A	4.9/5.0	17.2		CLAYEY SILT (meadow mat), dark gray 7.5YR 4/1, a lot of organics, soft, cohesive, moderate plasticity, little sheen. From 15.0 to 20.0 ft. bgs, stronger odor present and less cohesive (more crumbly), meadow mat even less cohesive from 20.0 to 25.0 ft. bgs. At 24.3 ft. bgs: abrupt increase in cohesiveness and is more plastic, higher clay content, soft, still a lot of organics, strong odor present.		ML
					7.9				
					8.3	-5			
					11.4				
15					10.4				
	4 (15-20 ft.)		N/A	5.0/5.0	14.2				
					7.8				
					6.9	-10			
					9.4				
20					20.1				
	5 (20-25 ft.)		N/A	5.0/5.0	21.4				
					17.5				
					13.2	-15			
					17.1				
25							CLAYEY SILT (meadow mat), dark gray 7.5YR 4/1, a lot of organics,		

WELL CONSTRUCTION



LEGEND:
msl = mean sea level
bgs = below ground surface
ND = not detected
NM = not measured
N/A = not applicable

SAMPLE TYPES:
D: drive
W: washed
ST: Shelby Tube
A: Auger
HA: hand auger
C: cored
RC: rotasonic core

SOIL: GRANULAR SOILS DENSITY PLASTIC SOILS DENSITY

MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
Trace: <5% Few: 16-30%
Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
When blow counts were not possible, density descriptions, as included in the "Materials Description" are based upon a thumb penetration test

WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

BORING LOG

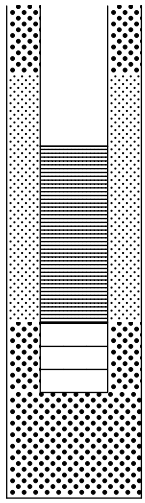
BORING/WELL ID: MW-400

SHEET 2 OF 2

PROJECT NAME: Quanta
SURFACE ELEVATION: 7.7 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 39.0 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/25/2015
FINISH DATE: 07/25/2015
NORTHING: 718353.75 **EASTING:** 633201.32
APPROX. DEPTH TO WATER:

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
25									
	6 (25-30 ft.)		N/A	3.4/5.0	32.1		soft, less cohesive (crumbly), medium plasticity, strong odor present.		ML
					19.1		Fine to medium SAND, bluish gray GLEY 2 5/5B, wet, little to trace silt, no sheen or product observed.		SP
					17.4	-20			
					18.6				
30	7 (30-35 ft.)		N/A	5.0/5.0	4.2				
					3.4				
					6.1	-25			
					5.3		SILTY CLAY, reddish brown 5YR 4/4 with pockets of gray clay, very soft, high plasticity. At 34.0 to 35.0 ft. bgs: pockets of fine to medium sand, dark olive/green, clay formation is cohesive, stiff, and has low plasticity.		CL
					0.9				
35	8 (35-39 ft.)		N/A	1.7/5.0	0.0		Fine to medium SAND, reddish brown 5YR 4/4, wet, little to trace silt, no sheen or product observed.		SW
					0.1	-30			
40							Bottom of boring @ 39.0 ft. bgs.		
						-35			
45									
						-40			
50									

WELL CONSTRUCTION



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SAMPLE TYPES:
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MOISTURE:
dry
moist
wet

0-4: very loose
5-10: loose
11-29: medium dense
30-49: dense
50+: very dense

0-2: very soft
3-4: soft
5-8: medium soft
9-15: stiff
16-30: very stiff
>30: hard

PROPORTIONS:
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Little: 6-15% Some: 31-49%

Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
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WELL LEGEND:
Well vault set in Portland Cement & Concrete
Grout Slurry
#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

CH2MHILL

BORING LOG

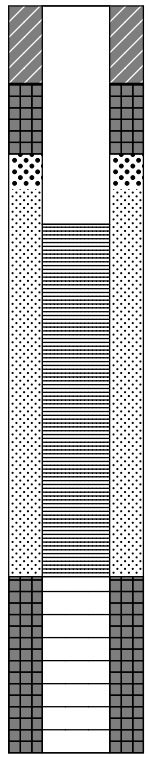
BORING/WELL ID: MW-402

SHEET 1 OF 1

PROJECT NAME: Quanta
SURFACE ELEVATION: 7.1 ft. MSL
LOCATION: Edgewater, NJ
MEASURING POINT:
PROJECT NUMBER: 662525
MEASURING POINT ELEVATION:
CLIENT: Honeywell International, Inc.
TOTAL DEPTH: 21.2 ft. bgs
DRILLING CONTRACTOR: Cascade
FOREMAN: Jon Weeks
DRILLING METHOD: Minisonic
DRILLING EQUIPMENT:
SAMPLING METHOD:
CH2M OBSERVER: T. Salsburg
START DATE: 07/27/2015
FINISH DATE: 07/27/2015
NORTHING: 718685.04 **EASTING:** 632585.24
APPROX. DEPTH TO WATER: 6 ft. bgs

DEPTH (FT. BGS)	SAMPLE OR RUN DESIGNATION	SAMPLE TYPE	BLOWS PER 6 INCHES or CORE RUN (time/ft.)	RECOVERY/ PENETRATION (FT.)	PID	ELEVATION (ft. MSL)	MATERIALS DESCRIPTION	GRAPHICAL LOG	USCS GROUP SYMBOL
0									
	1 (0-5 ft.)		N/A	5.0/5.0	0.0		SILT, some fine sand and gravel, organics, grass, topsoil.		ML
					0.0	5	SILT with fine to medium SAND and GRAVEL, brown 7.5YR 5/4 to dark brown 7.5YR 3/2, subangular to subrounded gravel. At 3.2 to 3.4 ft. bgs: layer of fine to medium sand, brownish yellow 10YR 6/8, dry, loose.		ML
					0.0				
					0.0		No recovery.		SW-GW
5	2 (5-10 ft.)		N/A	5.0/5.0	0.0		Fine to medium SAND and GRAVEL, very dark gray 7.5YR 3/1, moist, trace silt, sand becomes coarse at 6.8 ft. to 10 ft. bgs, large brick at 9.7 ft. bgs, layer of fine sand and gravel with trace silt at 11.9 ft. to 12.5 ft. bgs, sheen starts at 11.0 ft. and product starts at 13.0 ft. bgs, amount increases with depth to free product at 14.5 ft. bgs. Odor present throughout.		
					2.1	0			
					3.6				
					0.9				
10	3 (10-15 ft.)		N/A	5.0/5.0	5.3				
					13.2				
					18.9	-5			
					28.2				
					144				
					124				
15	4 (15-20 ft.)		N/A	5.0/5.0	148		PEAT, high concentrations of fibrous roots and organics, product observed until 15.5 ft. bgs. Two attempts for interval: no recovery first try; recovered 5 ft. of peat using flapper bit for second attempt. No product from 20.0 to 21.0 ft. bgs, odor present.		PT
					20.3	-10			
					18.8				
					16.3				
20	5 (20-21.2 ft.)		N/A	1.2/1.2	12.7				
						-15	Bottom of boring @ 21.2 ft. bgs.		
25									

WELL CONSTRUCTION



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Density designation based on blow counts for each 12" of penetration using a 140 lb. hammer w/30" drop
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#00 Sand
#1 Filter Sand
Riser
Well Screen
Sump

ROCK:
RQD (rock quality designation):
reported in % = [length of core in pieces 4" and longer/ length of run] x100

MONITORING WELL CERTIFICATION – FORM A – AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: _____
Name of Facility: Quanta
Location: Edgewater N. J.
NJPDES Permit No.: E201507616

CERTIFICATION

1. Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation:	
2. Owner's Well Number (As shown on the application or plans):	RW3-3
3. Well Completion Date:	7-22-15
4. Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	Flush
5. Total Depth of Well to the nearest ½ foot:	28'
6. Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	13'
7. Screen Length (or length of open hole) in feet:	10'
8. Screen or Slot Size:	20 slot
9. Screen or Slot Material:	Stainless
10. Casing Material: (PVC, Steel or Other-Specify):	PVC
11. Casing Diameter (inches):	4"
12. Static Water Level From Top of Casing at the Time of Installation (One-hundredth of a foot):	1.95
13. Yield (gallons per minute):	36PM
14. Development Technique (specify):	Waterra
15. Length of Time Well is Developed/ Pumped or Bailed:	2 Hours ____ Minutes
16. Lithologic Log:	____ Attach ____

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Jon Weeks
Name (Type or Print)

Signature

MW195190
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION – FORM A – AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: _____
Name of Facility: Quanta
Location: Edgewater NJ
NJPDES Permit No.: E201507667

CERTIFICATION

1. Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation:	
2. Owner's Well Number (As shown on the application or plans):	RW3-2
3. Well Completion Date:	7-22-15
4. Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	flush
5. Total Depth of Well to the nearest ½ foot:	27'
6. Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	12'
7. Screen Length (or length of open hole) in feet:	10'
8. Screen or Slot Size:	20slot
9. Screen or Slot Material:	Stainless
10. Casing Material: (PVC, Steel or Other-Specify):	PVC
11. Casing Diameter (inches):	4"
12. Static Water Level From Top of Casing at the Time of Installation (One-hundredth of a foot):	2.45
13. Yield (gallons per minute):	2 GPM
14. Development Technique (specify):	Waterra
15. Length of Time Well is Developed/ Pumped or Bailed:	2 Hours _____ Minutes
16. Lithologic Log:	_____ Attach _____

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Name (Type or Print)

Signature

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Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION – FORM A – AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: _____
Name of Facility: Quanta
Location: Edgewater NJ
NJPDES Permit No.: E201507697

CERTIFICATION

1. Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation:	
2. Owner's Well Number (As shown on the application or plans):	RW3-4
3. Well Completion Date:	7-23-15
4. Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	flush
5. Total Depth of Well to the nearest ½ foot:	28'
6. Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	13'
7. Screen Length (or length of open hole) in feet:	10'
8. Screen or Slot Size:	20 Slot
9. Screen or Slot Material:	Stainless
10. Casing Material: (PVC, Steel or Other-Specify):	PVC
11. Casing Diameter (inches):	4"
12. Static Water Level From Top of Casing at the Time of Installation (One-hundredth of a foot):	2.36
13. Yield (gallons per minute):	2 GPM
14. Development Technique (specify):	Waterra
15. Length of Time Well is Developed/ Pumped or Bailed:	1 Hours 30 Minutes
16. Lithologic Log:	____Attach_____

AUTHENTICATION

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Jon Weeks
Name (Type or Print)

Signature

MW195190
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION – FORM A – AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: _____
Name of Facility: Quanta
Location: Edgewater NJ
NJPDES Permit No.: E201507895

CERTIFICATION

1. Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation:	
2. Owner's Well Number (As shown on the application or plans):	RW3-5
3. Well Completion Date:	7-24-15
4. Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	flush
5. Total Depth of Well to the nearest ½ foot:	29'
6. Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	9'
7. Screen Length (or length of open hole) in feet:	15'
8. Screen or Slot Size:	20 slot
9. Screen or Slot Material:	stainless
10. Casing Material: (PVC, Steel or Other-Specify):	PVC
11. Casing Diameter (inches):	4"
12. Static Water Level From Top of Casing at the Time of Installation (One-hundredth of a foot):	3.45
13. Yield (gallons per minute):	2 GPM
14. Development Technique (specify):	waterra
15. Length of Time Well is Developed/ Pumped or Bailed:	2 Hours _____ Minutes
16. Lithologic Log:	____Attach_____

AUTHENTICATION

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Jon Weeks
Name (Type or Print)

Jon Weeks
Signature

MW195190
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION – FORM A – AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: _____
Name of Facility: Quanta
Location: Edgewater NJ
NJPDES Permit No.: E201507686

CERTIFICATION

1. Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation:	
2. Owner's Well Number (As shown on the application or plans):	MW-400
3. Well Completion Date:	7-27-15
4. Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	flush
5. Total Depth of Well to the nearest ½ foot:	36'
6. Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	29'
7. Screen Length (or length of open hole) in feet:	5'
8. Screen or Slot Size:	20 slot
9. Screen or Slot Material:	PVC
10. Casing Material: (PVC, Steel or Other-Specify):	PVC
11. Casing Diameter (inches):	4"
12. Static Water Level From Top of Casing at the Time of Installation (One-hundredth of a foot):	3.06
13. Yield (gallons per minute):	1/2 GPM
14. Development Technique (specify):	Waterra
15. Length of Time Well is Developed/ Pumped or Bailed:	3 Hours _____ Minutes
16. Lithologic Log:	____ Attach _____

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Jon Weeks
Name (Type or Print)

Jon Weeks
Signature

MW195190
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION – FORM A – AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: _____
Name of Facility: Quanta
Location: Edgewater N.J.
NJPDES Permit No.: NJ0150769

CERTIFICATION

1. Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation:	
2. Owner's Well Number (As shown on the application or plans):	MW402
3. Well Completion Date:	7-28-15
4. Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	flush
5. Total Depth of Well to the nearest ½ foot:	21'
6. Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	6'
7. Screen Length (or length of open hole) in feet:	10'
8. Screen or Slot Size:	20 slot
9. Screen or Slot Material:	Stainless
10. Casing Material: (PVC, Steel or Other-Specify):	PVC
11. Casing Diameter (inches):	4"
12. Static Water Level From Top of Casing at the Time of Installation (One-hundredth of a foot):	3.32
13. Yield (gallons per minute):	1.5
14. Development Technique (specify):	waterra
15. Length of Time Well is Developed/ Pumped or Bailed:	1 Hours 30 Minutes
16. Lithologic Log:	Attach

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Jon Weeks
Name (Type or Print)

Signature

MW 195190
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION – FORM A – AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee:_____
Name of Facility: _____
Location: _____
NJPDES Permit No.: _____

CERTIFICATION

1. Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation: __ __-__ __ __ __ __-__
2. Owner's Well Number (As shown on the application or plans): _____
3. Well Completion Date: _____
4. Distance from Top of Casing (cap off) to ground surface
   (One-hundredth of a foot): _____
5. Total Depth of Well to the nearest ½ foot:
6. Depth to Top of Screen From Top of Casing (or depth to open hole)
   To the nearest ½ foot: _____
7. Screen Length (or length of open hole) in feet: _____
8. Screen or Slot Size: _____
9. Screen or Slot Material: _____
10. Casing Material: (PVC, Steel or Other-Specify): _____
11. Casing Diameter (inches): _____
12. Static Water Level From Top of Casing at the Time of Installation
    (One-hundredth of a foot): _____
13. Yield (gallons per minute): _____
14. Development Technique (specify): _____
15. Length of Time Well is Developed/ Pumped or Bailed: ____Hours _____Minutes
16. Lithologic Log: ____Attach_____

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

_____ _____
Name (Type or Print) Signature

_____ Seal
Certification or License No.

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Quanta Resources Corporation Superfund Site
List all AKAs: Bryan Christensen c/o Daibes Enterprises
Street Address: 45 River Road
Municipality: Borough of Edgewater (Township, Borough or City)
County: Bergen Zip Code: 07020
Program Interest (PI) Number(s): Case Tracking Number(s): NJD000606442

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner I Park Edgewater LLC
2. Well Location (Street Address) 45 River Road
3. Well Location (Municipal Block and Lot) Block# 99 Lot # 1

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201507686
2. Site Well Number (As shown on application or plans): MW-400
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 48' 15.90" Longitude: West 73° 59' 25.33"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 718,354 feet East 633,201 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 6.74
   Elevation Top of Outer casing: 7.70 Elevation of ground: 7.7
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, Horiz. Datum is NAD 1983 based on NGS Opus Solution 83431992.05o, dated 07/19/05. Base Stations used are NJI2 (PID AJ3348), SHK1 (PID AF9509) and LAMT (PID AJ4872).
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date: 09-16-15
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Quanta Resources Corporation Superfund Site
List all AKAs: Bryan Christensen c/o Daibes Enterprises
Street Address: 125 River Road
Municipality: Borough of Edgewater (Township, Borough or City)
County: Bergen Zip Code: 07020
Program Interest (PI) Number(s): Case Tracking Number(s): NJD000606442

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner: Metropolitan Consom, LLC
2. Well Location (Street Address): 125 River Road
3. Well Location (Municipal Block and Lot) Block#: 93 Lot #: 4

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201507669
2. Site Well Number (As shown on application or plans): MW 402
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 48' 19.20" Longitude: West 73° 59' 33.32"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 718,685 feet East 632,585 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 6.16
   Elevation Top of Outer casing: 7.13 Elevation of ground: 7.1
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, Horiz. Datum is NAD 1983 based on NGS Opus Solution 83431992.05o, dated 07/19/05. Base Stations used are NJI2 (PID AJ3348), SHK1 (PID AF9509) and LAMT (PID AJ4872).
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Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Quanta Resources Corporation Superfund Site
List all AKAs: Bryan Christensen c/o Daibes Enterprises
Street Address: 145 River Road
Municipality: Borough of Edgewater (Township, Borough or City)
County: Bergen Zip Code: 07020
Program Interest (PI) Number(s): Case Tracking Number(s): NJD000606442

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner: Hudson River Association
2. Well Location (Street Address): 145 River Road
3. Well Location (Municipal Block and Lot) Block#: 95 Lot #: 1

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201507667
2. Site Well Number (As shown on application or plans): RW3-2
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 48' 19.75" Longitude: West 73° 59' 25.69"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 718,743 feet East 633,171 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 5.30
   Elevation Top of Outer casing: 6.25 Elevation of ground: 6.3
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, Horiz. Datum is NAD 1983 based on NGS Opus Solution 83431992.05o, dated 07/19/05. Base Stations used are NJI2 (PID AJ3348), SHK1 (PID AF9509) and LAMT (PID AJ4872).
7. Significant observations and notes:

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SEAL

Professional Land Surveyor's Signature: Date: 09-16-15
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Quanta Resources Corporation Superfund Site
List all AKAs: Bryan Christensen c/o Daibes Enterprises
Street Address: 145 River Road
Municipality: Borough of Edgewater (Township, Borough or City)
County: Bergen Zip Code: 07020
Program Interest (PI) Number(s): Case Tracking Number(s): NJD000606442

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner: Hudson River Association
2. Well Location (Street Address): 145 River Road
3. Well Location (Municipal Block and Lot) Block# 95 Lot # 1

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201507616
2. Site Well Number (As shown on application or plans): RW3-3
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 48' 19.30" Longitude: West 73° 59' 24.70"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 718,699 feet East 633,248 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 5.61
   Elevation Top of Outer casing: 6.44 Elevation of ground: 6.4
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, Horiz. Datum is NAD 1983 based on NGS Opus Solution 83431992.05o, dated 07/19/05. Base Stations used are NJI2 (PID AJ3348), SHK1 (PID AF9509) and LAMT (PID AJ4872).
7. Significant observations and notes:

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Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Quanta Resources Corporation Superfund Site
List all AKAs: Bryan Christensen c/o Daibes Enterprises
Street Address: 45 River Road
Municipality: Borough of Edgewater (Township, Borough or City)
County: Bergen Zip Code: 07020
Program Interest (PI) Number(s): Case Tracking Number(s): NJD000606442

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner 115 River Road LLC
2. Well Location (Street Address) 115 River Road
3. Well Location (Municipal Block and Lot) Block# 96 Lot # 3.04

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201507697
2. Site Well Number (As shown on application or plans): RW3-4
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 48' 17.22" Longitude: West 73° 59' 24.99"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 718,488 feet East 633,227 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 6.90
   Elevation Top of Outer casing: 7.96 Elevation of ground: 8.0
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, Horiz. Datum is NAD 1983 based on NGS Opus Solution 83431992.05o, dated 07/19/05. Base Stations used are NJI2 (PID AJ3348), SHK1 (PID AF9509) and LAMT (PID AJ4872).
7. Significant observations and notes:

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SEAL

Professional Land Surveyor's Signature: Date: 09-16-15
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Quanta Resources Corporation Superfund Site
List all AKAs: Bryan Christensen c/o Daibes Enterprises
Street Address: 45 River Road
Municipality: Borough of Edgewater (Township, Borough or City)
County: Bergen Zip Code: 07020
Program Interest (PI) Number(s): Case Tracking Number(s): NJD000606442

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner I Park Edgewater LLC
2. Well Location (Street Address) 45 River Road
3. Well Location (Municipal Block and Lot) Block# 99 Lot # 1

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201507895
2. Site Well Number (As shown on application or plans): RW3-5
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 48' 16.64" Longitude: West 73° 59' 26.24"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 718,428 feet East 633,131 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 6.44
   Elevation Top of Outer casing: 7.36 Elevation of ground: 7.4
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, Horiz. Datum is NAD 1983 based on NGS Opus Solution 83431992.05o, dated 07/19/05. Base Stations used are NJI2 (PID AJ3348), SHK1 (PID AF9509) and LAMT (PID AJ4872).
7. Significant observations and notes:

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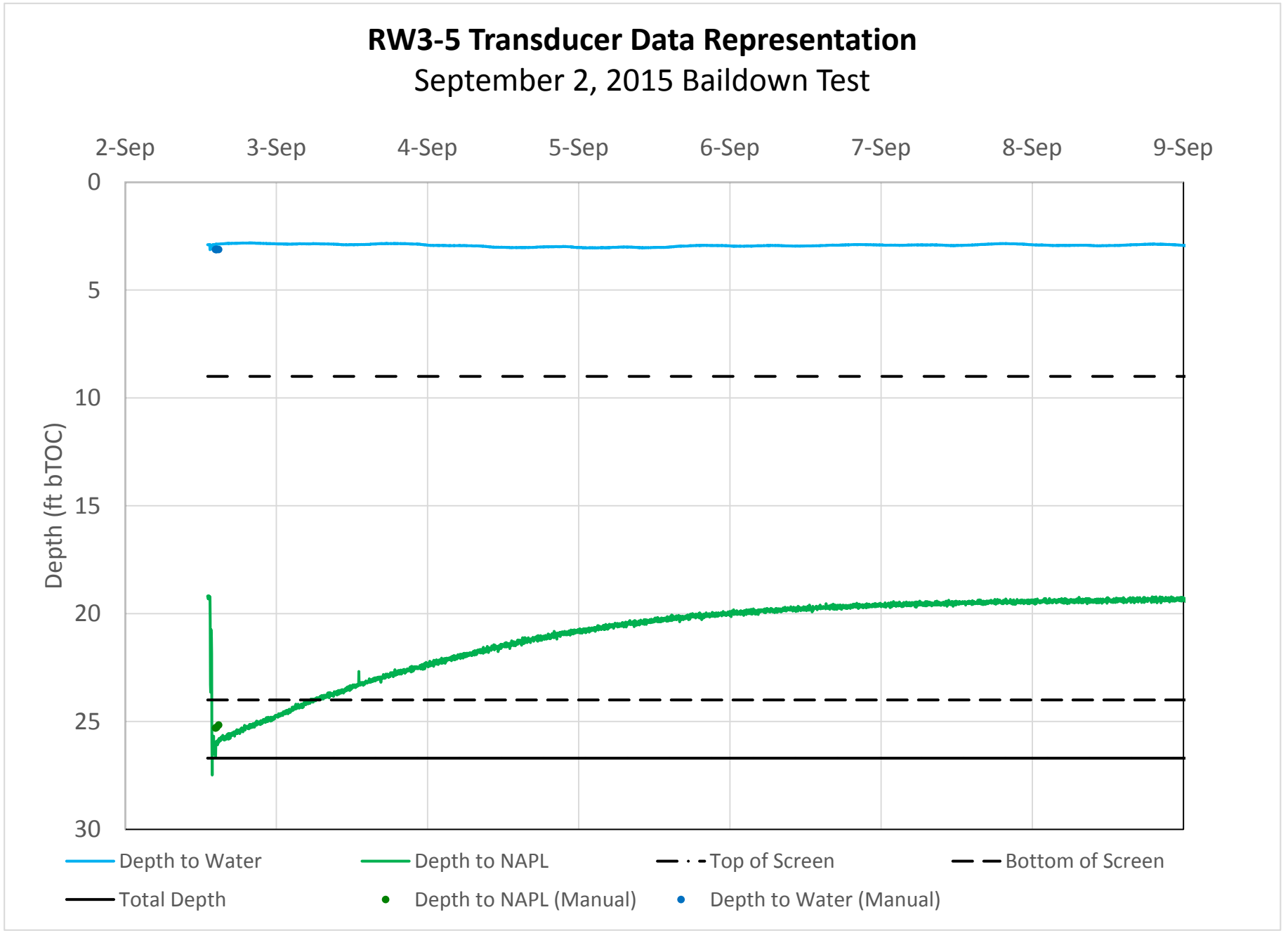
SEAL

Professional Land Surveyor's Signature: R. E. V Date: 09-16-15
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

Appendix B
Transducer Data and Transmissivity Calculations


RW3-5 Transducer Data Representation
September 2, 2015 Baildown Test
2-Sep
3-Sep
4-Sep
5-Sep
6-Sep
7-Sep
8-Sep
9-Sep
0
5
10
15
20
25
30
Depth (ft bTOC)
Depth to Water
Depth to NAPL
Top of Screen
Bottom of Screen
Total Depth
Depth to NAPL (Manual)
Depth to Water (Manual)

Well Designation: RW3-5
Date: 2-Sep-15

Amount of volume to remove (gal) 6.21

TEST 1	
Ground Surface Elev (ft msl)	7.40
Top of Casing Elev (ft msl)	6.44
Well Casing Radius, r_c (ft):	0.167
Well Radius, r_w (ft):	0.333
DNAPL Specific Yield, S_y:	0.175
DNAPL Density Ratio, ρ_r:	1.050
Top of Screen (ft bgs):	9.00
Bottom of Screen (ft bgs):	24.00
DNAPL Baildown Vol. (gal.):	3.8
Effective Radius, r_{e3} (ft):	0.206
Effective Radius, r_{e2} (ft):	0.167
Initial Casing DNAPL Vol. (gal.):	4.90
Initial Filter DNAPL Vol. (gal.):	1.31
Sump Length (ft)	3.7
DNAPL Well Volume Rem (%)	60%

5 foot sump but there is some silt in the bottom

Drawdown Adjustment (ft)
0

DNAPL Transmissivity (ft^2/day)			
B&R Method	C&J Method	CB&P Method	Theim Method
0.33	1.30	0.60	1.21

Submerged Screen	no
Radius of Influence Ratio	18.6
Theim Transmissivity (ft^2/day)	1.207
Constant Drawdown (ft)	0.10
Constant Discharge (ft^3/day)	0.245
DNAPL Behavior	Perched
Formation Thickness (ft)	2.10

Recovery Rate Estimates	
Average Transmissivity (ft^2/day)	0.74
Skimming Systems	
Maximum Skimming Drawdown (ft)	0.10
Estimated Skimming Recovery Rate (gpd)	0.80
Enhanced Skimming System	
Drawdown Enhancement (Vacuum or Water) (ft H20)	1.00
Estimated Enhanced Skimming Recovery Rate (gpd)	8.03

Enter Data Here

Identified constant discharge conditions

Borehole Recharge

Date and Time	Time (min)	DTP (ft btoc)	DTW (ft btoc)	TD (ft btoc)	DTP (ft bgs)	DTW (ft bgs)	TD (ft bgs)	Water Table Depth (ft)	DNAPL Drawdown s_n (ft)	Average Time (min)	DNAPL Discharge Q_n (ft^3/d)	s_n (ft)	b_n (ft)	r_e (ft)
9/2/15 13:05	-20.00	19.20	2.90	26.70	20.17	3.87	27.67	3.87	0.10				7.50	
9/2/15 13:57	32	26.18	2.91	26.70	27.15	3.87	27.67	3.87	0.10	16.0				
9/2/15 14:09	44	26.12	2.89	26.70	27.09	3.85	27.67	3.85	0.10	38.0	1.077	0.10	0.58	0.167
9/2/15 14:15	50	25.96	2.89	26.70	26.93	3.86	27.67	3.86	0.10	47.0	1.063	0.10	0.74	0.167
9/2/15 14:25	60	25.94	2.89	26.70	26.91	3.85	27.67	3.85	0.10	55.0	0.269	0.10	0.76	0.167
9/2/15 14:35	70	25.90	2.88	26.70	26.87	3.84	27.67	3.84	0.10	65.0	0.457	0.10	0.80	0.167
9/2/15 14:43	78	25.90	2.88	26.70	26.87	3.84	27.67	3.84	0.10	74.0	0.628	0.10	0.80	0.167
9/2/15 14:47	81.99999999	25.86	2.87	26.70	26.83	3.84	27.67	3.84	0.10	80.0	1.257	0.10	0.84	0.167
9/2/15 14:51	86	25.82	2.87	26.70	26.79	3.84	27.67	3.84	0.10	84.0	0.677	0.10	0.88	0.167
9/2/15 14:55	90	25.78	2.87	26.70	26.75	3.84	27.67	3.84	0.10	88.0	0.595	0.10	0.92	0.167
9/2/15 15:13	108	25.72	2.86	26.70	26.69	3.83	27.67	3.83	0.10	99.0	0.298	0.10	0.98	0.167
9/2/15 15:29	124	25.64	2.86	26.70	26.61	3.83	27.67	3.83	0.10	116.0	0.287	0.10	1.06	0.167
9/2/15 16:11	166	25.60	2.84	26.70	26.57	3.81	27.67	3.81	0.10	145.0	0.146	0.10	1.10	0.167
9/2/15 16:23	178	25.56	2.85	26.70	26.53	3.81	27.67	3.81	0.10	172.0	0.314	0.10	1.14	0.167
9/2/15 16:55	210	25.54	2.84	26.70	26.51	3.80	27.67	3.80	0.10	194.0	0.321	0.10	1.16	0.167
9/2/15 17:03	218	25.52	2.84	26.70	26.49	3.80	27.67	3.80	0.10	214.0	0.268	0.10	1.18	0.167
9/2/15 17:11	226	25.52	2.84	26.70	26.49	3.80	27.67	3.80	0.10	222.0	0.262	0.10	1.18	0.167
9/2/15 17:15	230	25.48	2.84	26.70	26.45	3.80	27.67	3.80	0.10	228.0	0.237	0.10	1.22	0.167
9/2/15 17:33	248	25.46	2.83	26.70	26.43	3.80	27.67	3.80	0.10	239.0	0.265	0.10	1.24	0.167
9/2/15 17:35	250	25.44	2.83	26.70	26.41	3.80	27.67	3.80	0.10	249.0	0.310	0.10	1.26	0.167
9/2/15 17:43	258	25.38	2.84	26.70	26.35	3.80	27.67	3.80	0.10	254.0	0.296	0.10	1.32	0.167
9/2/15 18:21	296	25.34	2.83	26.70	26.31	3.79	27.67	3.79	0.10	277.0	0.284	0.10	1.36	0.167
9/2/15 18:25	300	25.32	2.83	26.70	26.29	3.79	27.67	3.79	0.10	298.0	0.284	0.10	1.38	0.167
9/2/15 18:29	304	25.30	2.83	26.70	26.27	3.79	27.67	3.79	0.10	302.0	0.254	0.10	1.40	0.167
9/2/15 18:33	308	25.30	2.83	26.70	26.27	3.79	27.67	3.79	0.10	306.0	0.254	0.10	1.40	0.167
9/2/15 18:57	332	25.18	2.83	26.70	26.15	3.79	27.67	3.79	0.10	320.0	0.295	0.10	1.52	0.167
9/2/15 19:45	380	25.14	2.83	26.70	26.11	3.79	27.67	3.79	0.10	356.0	0.227	0.10	1.56	0.167

Well Designation:	RW3-5
Date:	9/2/15

Figure 1

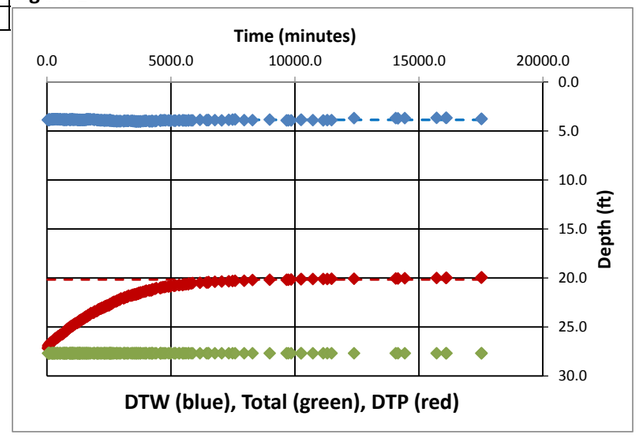
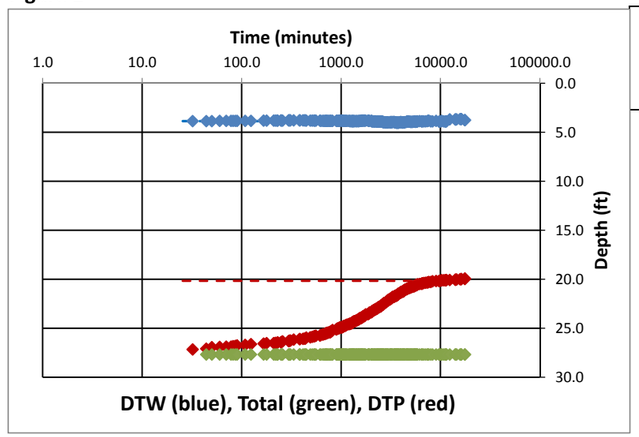


Figure 2



25.6	20.17
17518	20.17
25.6	3.868
17518	3.868

Figure 3

Q_n (ft³/d)	s_n (ft)
0	0
0.30	0.12

Drawdown Adjust.	
Δs_n (ft)	0

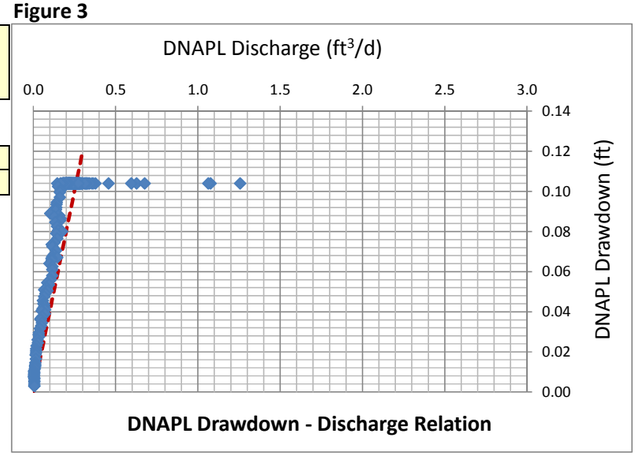
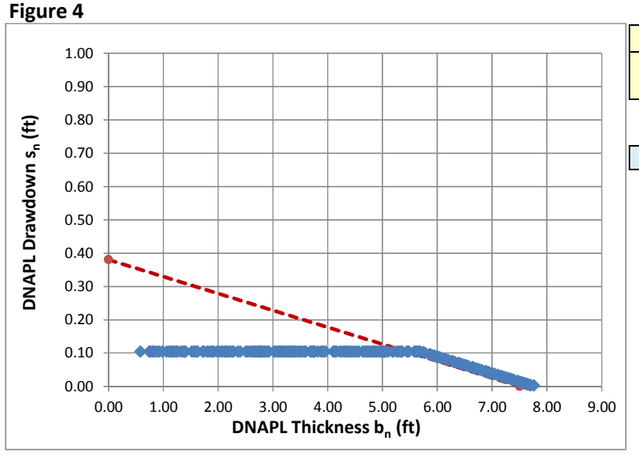


Figure 4



b_n	s_n
0	0.38
7.5	0

J-ratio	-0.051

Figure 5

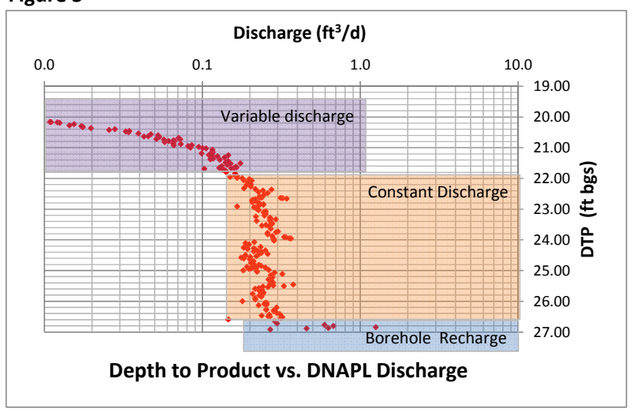
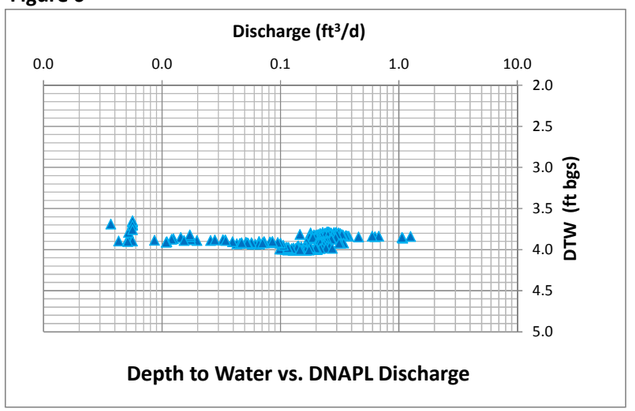


Figure 6



Well Designation:	RW3-5
Date:	9/2/15

Figure 7

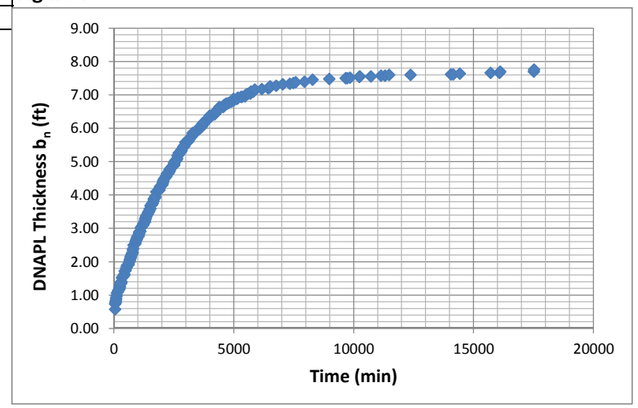


Figure 8

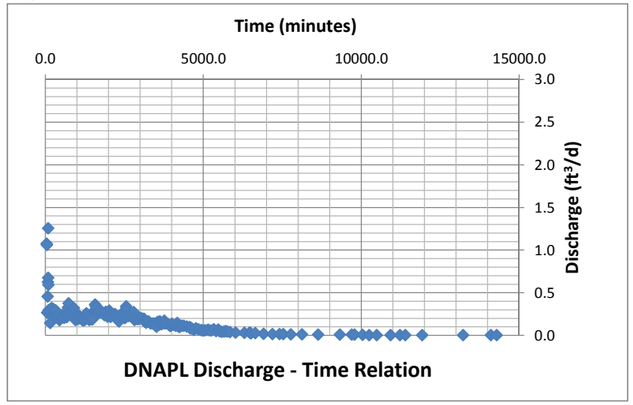


Figure 9

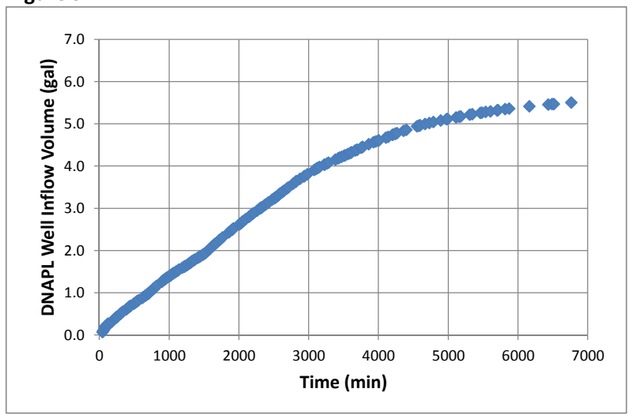
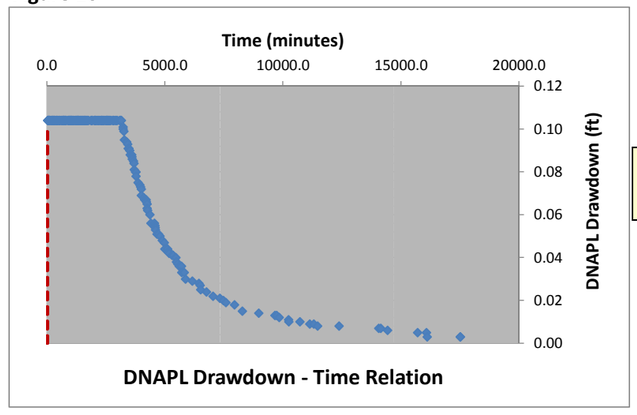
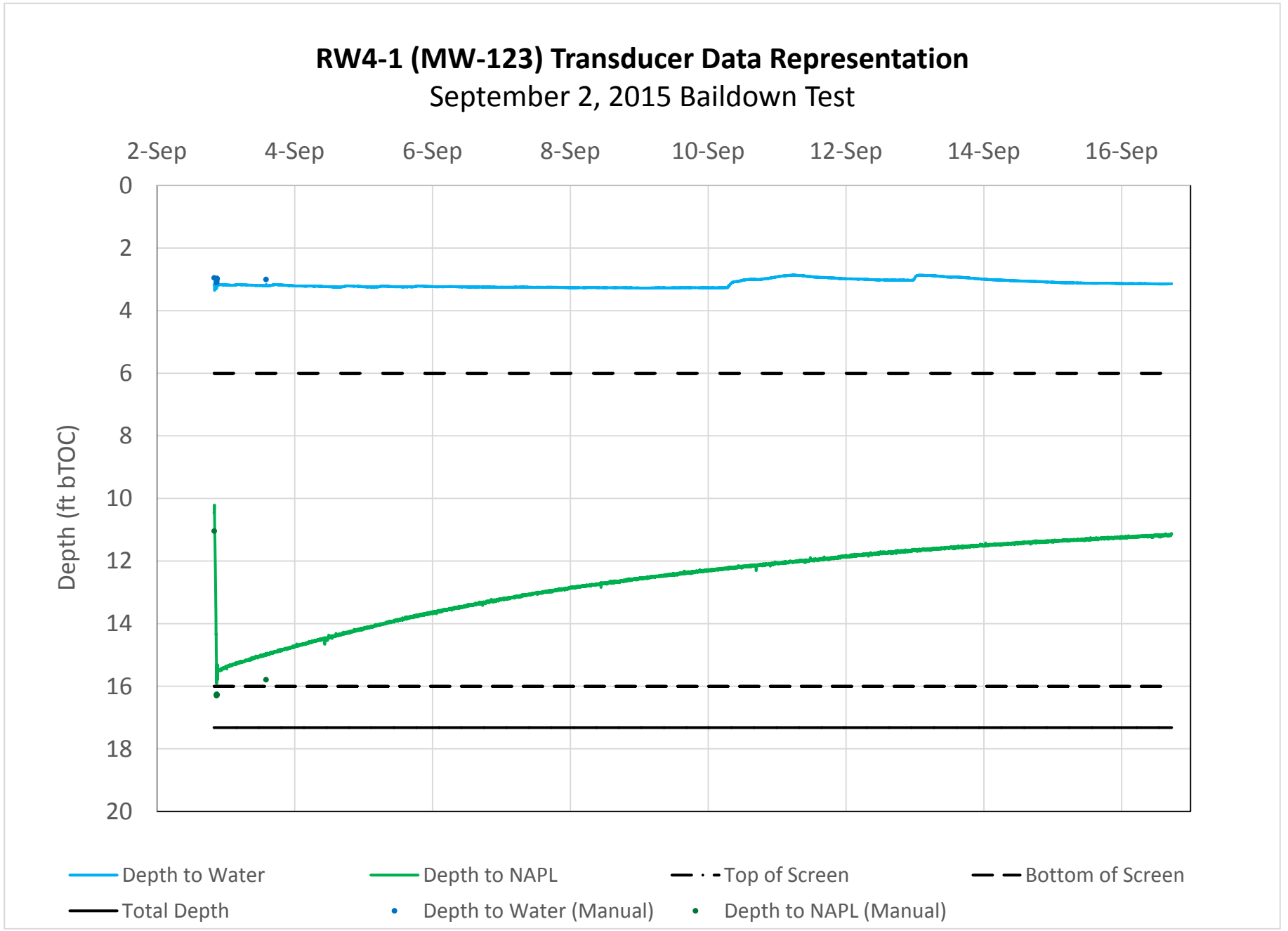


Figure 10



t (min)	s_n (ft)
12	0
12	0.1


RW4-1 (MW-123) Transducer Data Representation
September 2, 2015 Baildown Test
2-Sep
4-Sep
6-Sep
8-Sep
10-Sep
12-Sep
14-Sep
16-Sep
0
2
4
6
8
10
12
14
16
18
20
Depth (ft bTOC)
Depth to Water
Depth to NAPL
Top of Screen
Bottom of Screen
Total Depth
Depth to Water (Manual)
Depth to NAPL (Manual)

Well Designation: MW-123
Date: 2-Sep-15

Amount of volume to remove (gal) 7.52

TEST 1	
Ground Surface Elev (ft msl)	6.00
Top of Casing Elev (ft msl)	5.54
Well Casing Radius, r_c (ft):	0.167
Well Radius, r_w (ft):	0.417
DNAPL Specific Yield, S_y:	0.175
DNAPL Density Ratio, ρ_r:	1.110
Top of Screen (ft bgs):	6.00
Bottom of Screen (ft bgs):	16.00
DNAPL Baildown Vol. (gal.):	4.0
Effective Radius, r_{e3} (ft):	0.231
Effective Radius, r_{e2} (ft):	0.167
Initial Casing DNAPL Vol. (gal.):	4.47
Initial Filter DNAPL Vol. (gal.):	3.04
Sump Length (ft)	1.8
DNAPL Well Volume Rem (%)	53%

Drawdown Adjustment (ft)
0

DNAPL Transmissivity (ft^2/day)			
B&R Method	C&J Method	CB&P Method	Theim Method
0.08	0.12	0.07	0.15

Submerged Screen	no
Radius of Influence Ratio	22.0
Theim Transmissivity (ft^2/day)	0.150
Constant Drawdown (ft)	0.34
Constant Discharge (ft^3/day)	0.099
DNAPL Behavior	Perched
Formation Thickness (ft)	3.07

Recovery Rate Estimates	
Average Transmissivity (ft^2/day)	0.09
Skimming Systems	
Maximum Skimming Drawdown (ft)	0.34
Estimated Skimming Recovery Rate (gpd)	0.31
Enhanced Skimming System	
Drawdown Enhancement (Vacuum or Water) (ft H20)	1.00
Estimated Enhanced Skimming Recovery Rate (gpd)	1.14

Enter Data Here

Identified constant discharge conditions

Borehole Recharge

Date and Time	Time (min)	DTP (ft btoc)	DTW (ft btoc)	TD (ft btoc)	DTP (ft bgs)	DTW (ft bgs)	TD (ft bgs)	Water Table Depth (ft)	DNAPL Drawdown s_n (ft)	Average Time (min)	DNAPL Discharge Q_n (ft^3/d)	s_n (ft)	b_n (ft)	r_e (ft)
9/2/16 17:02	-10.00	10.47	3.17	17.32	10.93	3.63	17.78	3.63	0.34				6.85	
9/2/16 21:00	48	15.33	3.21	17.32	15.79	3.67	17.78	3.67	0.34	24.0				
9/2/16 21:18	66.00000001	15.32	3.17	17.32	15.78	3.63	17.78	3.63	0.34	57.0	0.101	0.34	2.00	0.231
9/3/16 2:04	352	15.31	3.19	17.32	15.77	3.65	17.78	3.65	0.34	209.0	0.006	0.34	2.01	0.231
9/3/16 2:18	366	15.31	3.19	17.32	15.77	3.65	17.78	3.65	0.34	359.0	0.130	0.34	2.01	0.231
9/3/16 2:22	370	15.30	3.19	17.32	15.76	3.65	17.78	3.65	0.34	368.0	0.454	0.34	2.02	0.231
9/3/16 2:32	380	15.28	3.19	17.32	15.74	3.65	17.78	3.65	0.34	375.0	0.147	0.34	2.04	0.231
9/3/16 3:10	418	15.28	3.18	17.32	15.74	3.64	17.78	3.64	0.34	399.0	0.085	0.34	2.04	0.231
9/3/16 3:24	432	15.26	3.18	17.32	15.72	3.64	17.78	3.64	0.34	425.0	0.143	0.34	2.06	0.231
9/3/16 3:36	444	15.26	3.18	17.32	15.72	3.64	17.78	3.64	0.34	438.0	0.079	0.34	2.06	0.231
9/3/16 3:48	456	15.25	3.17	17.32	15.71	3.63	17.78	3.63	0.34	450.0	0.151	0.34	2.07	0.231
9/3/16 4:10	478	15.25	3.17	17.32	15.71	3.63	17.78	3.63	0.34	467.0	0.117	0.34	2.07	0.231
9/3/16 4:12	480	15.24	3.17	17.32	15.70	3.63	17.78	3.63	0.34	479.0	0.151	0.34	2.08	0.231
9/3/16 4:50	518	15.22	3.17	17.32	15.68	3.63	17.78	3.63	0.34	499.0	0.113	0.34	2.10	0.231
9/3/16 4:58	526	15.22	3.17	17.32	15.68	3.63	17.78	3.63	0.34	522.0	0.108	0.34	2.10	0.231
9/3/16 5:10	538	15.20	3.17	17.32	15.66	3.63	17.78	3.63	0.34	532.0	0.112	0.34	2.12	0.231
9/3/16 6:24	612	15.19	3.17	17.32	15.65	3.63	17.78	3.63	0.34	575.0	0.108	0.34	2.13	0.231
9/3/16 6:50	638	15.19	3.18	17.32	15.65	3.64	17.78	3.64	0.34	625.0	0.110	0.34	2.13	0.231
9/3/16 6:52	640	15.17	3.18	17.32	15.63	3.64	17.78	3.64	0.34	639.0	0.107	0.34	2.15	0.231
9/3/16 7:12	660	15.16	3.18	17.32	15.62	3.64	17.78	3.64	0.34	650.0	0.120	0.34	2.16	0.231
9/3/16 7:20	668	15.16	3.18	17.32	15.62	3.64	17.78	3.64	0.34	664.0	0.114	0.34	2.16	0.231
9/3/16 7:56	704	15.14	3.18	17.32	15.60	3.64	17.78	3.64	0.34	686.0	0.117	0.34	2.18	0.231
9/3/16 8:18	726	15.13	3.18	17.32	15.59	3.64	17.78	3.64	0.34	715.0	0.137	0.34	2.19	0.231
9/3/16 8:34	742	15.13	3.18	17.32	15.59	3.64	17.78	3.64	0.34	734.0	0.162	0.34	2.19	0.231
9/3/16 8:44	752	15.12	3.18	17.32	15.58	3.64	17.78	3.64	0.34	747.0	0.115	0.34	2.20	0.231
9/3/16 8:52	760	15.10	3.18	17.32	15.56	3.64	17.78	3.64	0.34	756.0	0.124	0.34	2.22	0.231
9/3/16 9:12	780	15.10	3.19	17.32	15.56	3.65	17.78	3.65	0.34	770.0	0.114	0.34	2.22	0.231

Well Designation:	MW-123
Date:	9/2/15

Figure 1

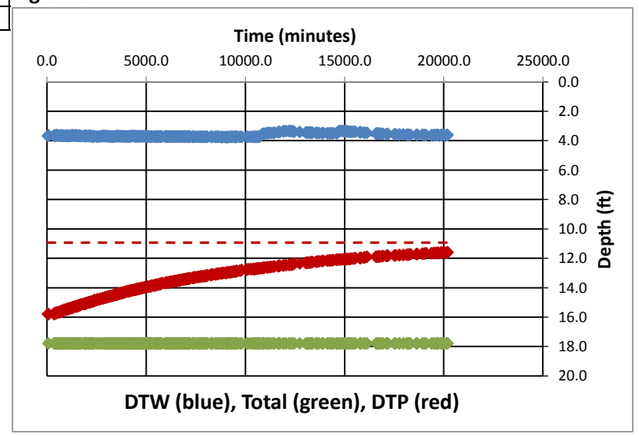
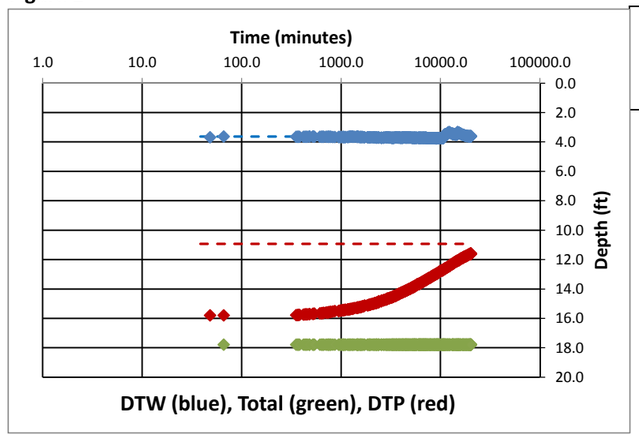


Figure 2



38.4	10.93
20178	10.93
38.4	3.628367
20178	3.628367

Figure 3

Q_n (ft^3/d)	s_n (ft)
0	0
0.12	0.28

Drawdown Adjust.	
Δs_n (ft)	0

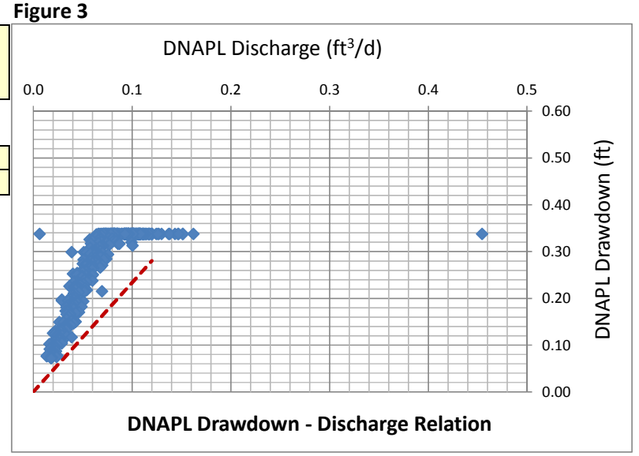
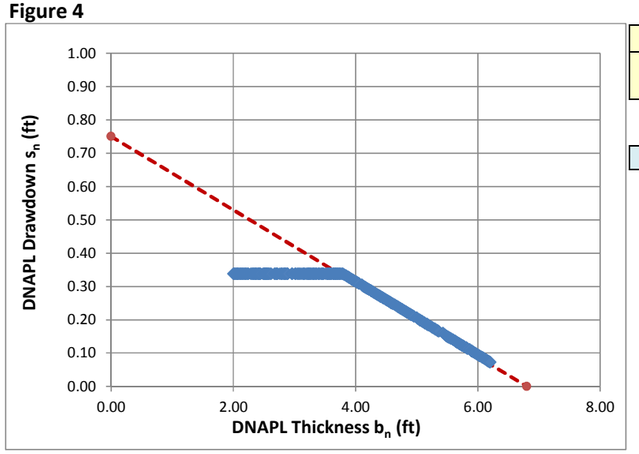


Figure 4



b_n	s_n
0	0.75
6.8	0

J-ratio	-0.110

Figure 5

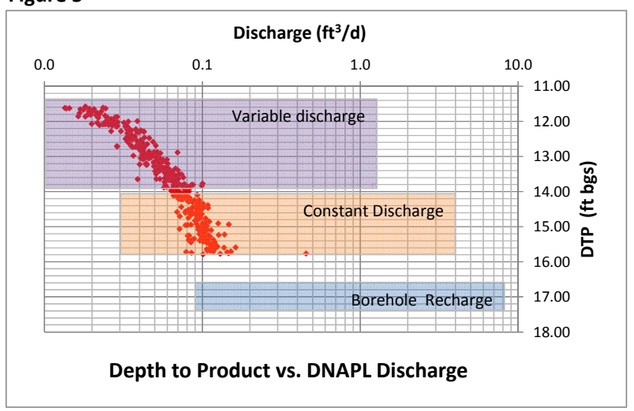
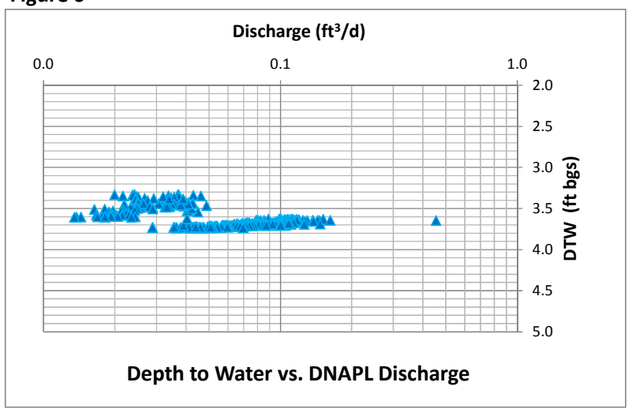


Figure 6



Well Designation:	MW-123
Date:	9/2/15

Figure 7

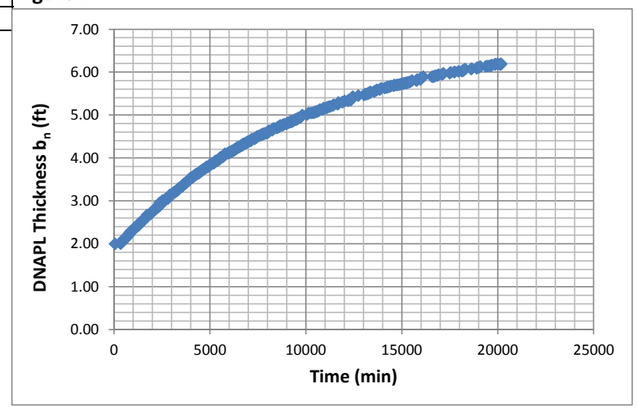


Figure 8

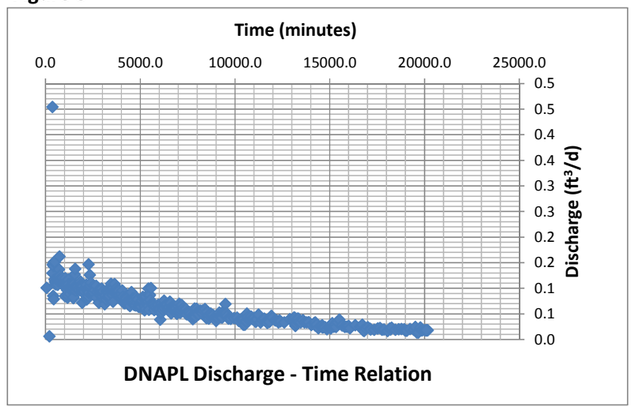


Figure 9

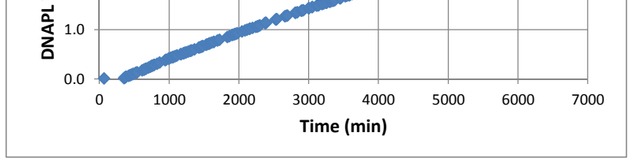
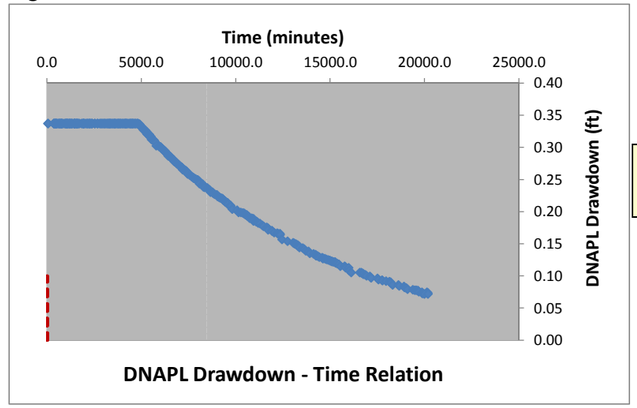
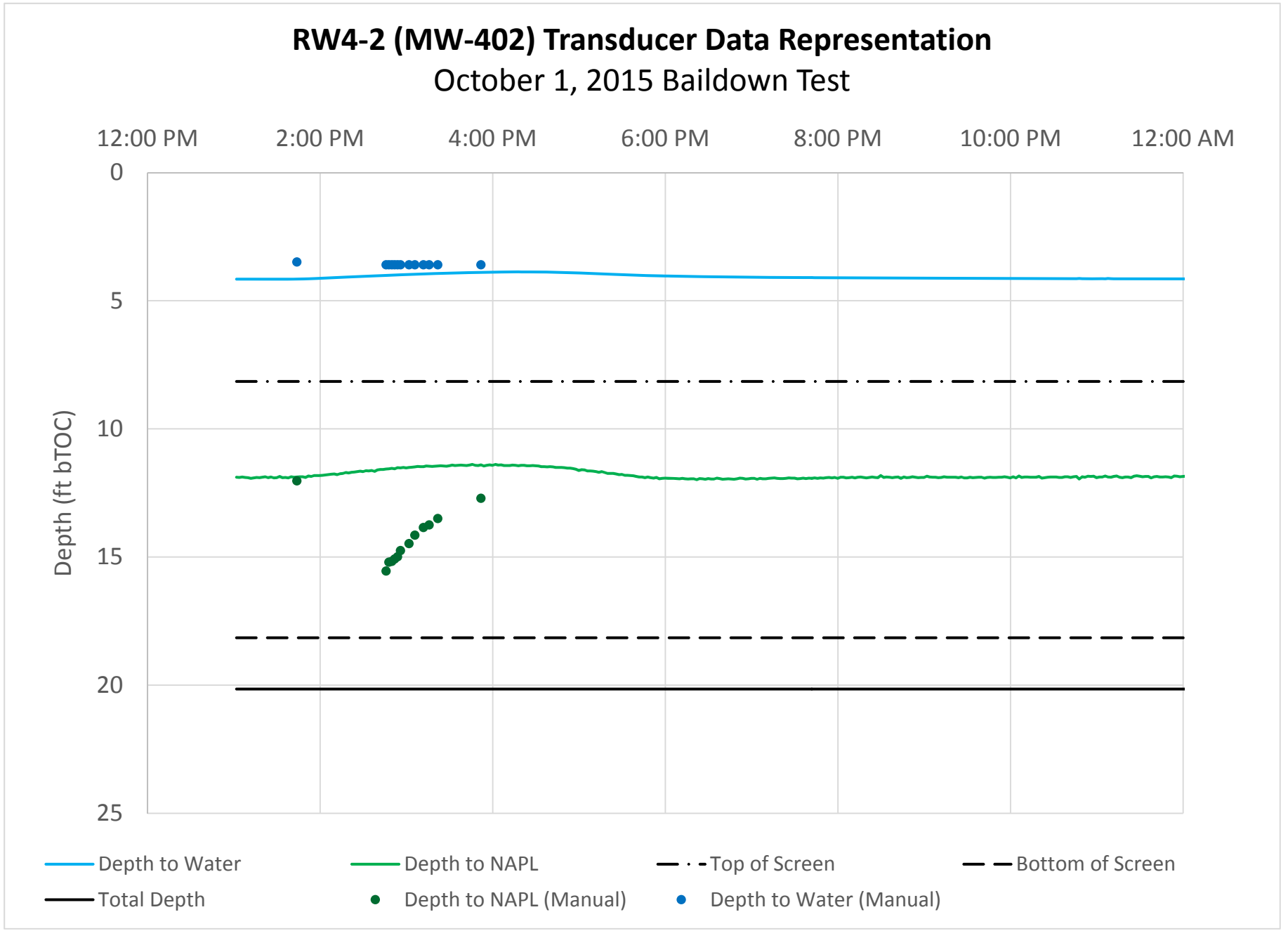


Figure 10



t (min)	s_n (ft)
12	0
12	0.1


RW4-2 (MW-402) Transducer Data Representation
October 1, 2015 Baildown Test
12:00 PM
2:00 PM
4:00 PM
6:00 PM
8:00 PM
10:00 PM
12:00 AM
0
5
10
15
20
25
Depth (ft bTOC)
Depth to Water
Depth to NAPL
Top of Screen
Bottom of Screen
Total Depth
Depth to NAPL (Manual)
Depth to Water (Manual)

Well Designation: MW-402
Date: 1-Oct-15

Amount of volume to remove (gal) 6.37

TEST 1

Ground Surface Elev (ft msl)	7.10
Top of Casing Elev (ft msl)	6.16
Well Casing Radius, r_c (ft):	0.167
Well Radius, r_w (ft):	0.333
DNAPL Specific Yield, S_y:	0.175
DNAPL Density Ratio, ρ_r:	1.110
Top of Screen (ft bgs):	6.20
Bottom of Screen (ft bgs):	16.20
DNAPL Baildown Vol. (gal.):	4.0
Effective Radius, r_{e3} (ft):	0.206
Effective Radius, r_{e2} (ft):	0.167
Initial Casing DNAPL Vol. (gal.):	5.30
Initial Filter DNAPL Vol. (gal.):	1.07
Sump Length (ft)	5.0
DNAPL Well Volume Rem (%)	63%

Drawdown Adjustment (ft)
0

DNAPL Transmissivity (ft^2/day)			
B&R Method	C&J Method	CB&P Method	Theim Method
14.12	22.00	10.00	28.14

Submerged Screen	no
Radius of Influence Ratio	15.2
Theim Transmissivity (ft^2/day)	28.136
Constant Drawdown (ft)	0.20
Constant Discharge (ft^3/day)	10.995
DNAPL Behavior	Perched
Formation Thickness (ft)	2.12

Recovery Rate Estimates	
Average Transmissivity (ft^2/day)	15.37
Skimming Systems	
Maximum Skimming Drawdown (ft)	0.23
Estimated Skimming Recovery Rate (gpd)	36.59
Enhanced Skimming System	
Drawdown Enhancement (Vacuum or Water) (ft H20)	1.00
Estimated Enhanced Skimming Recovery Rate (gpd)	177.93

Enter Data Here

Identified constant discharge conditions

Borehole Recharge

Date and Time	Time (min)	DTP (ft btoc)	DTW (ft btoc)	TD (ft btoc)	DTP (ft bgs)	DTW (ft bgs)	TD (ft bgs)	Water Table Depth (ft)	DNAPL Drawdown s_n (ft)	Average Time (min)	DNAPL Discharge Q_n (ft^3/d)	s_n (ft)	b_n (ft)	r_e (ft)
10/1/15 13:43	0.00	12.03	3.49	20.15	12.97	4.43	21.09	4.43	0.23				8.12	
10/1/15 14:45	0.1	15.55	3.60	20.15	16.49	4.54	21.09	4.54	0.20	0.1	23.149	0.10	4.60	0.167
10/1/15 14:47	2	15.20	3.60	20.15	16.14	4.54	21.09	4.54	0.20	1.0	18.672	0.20	4.95	0.206
10/1/15 14:49	4	15.17	3.60	20.15	16.11	4.54	21.09	4.54	0.20	3.0	5.749	0.20	4.98	0.206
10/1/15 14:51	6	15.08	3.60	20.15	16.02	4.54	21.09	4.54	0.20	5.0	8.624	0.20	5.07	0.206
10/1/15 14:53	8	14.99	3.60	20.15	15.93	4.54	21.09	4.54	0.20	7.0	15.810	0.20	5.16	0.206
10/1/15 14:55	10	14.75	3.60	20.15	15.69	4.54	21.09	4.54	0.20	9.0	12.217	0.20	5.40	0.206
10/1/15 15:01	16	14.48	3.60	20.15	15.42	4.54	21.09	4.54	0.20	13.0	11.498	0.20	5.67	0.206
10/1/15 15:05	20	14.15	3.60	20.15	15.09	4.54	21.09	4.54	0.20	18.0	12.073	0.20	6.00	0.206
10/1/15 15:11	26	13.85	3.60	20.15	14.79	4.54	21.09	4.54	0.20	23.0	7.665	0.20	6.30	0.206
10/1/15 15:15	30	13.75	3.60	20.15	14.69	4.54	21.09	4.54	0.19	28.0	6.707	0.19	6.40	0.206
10/1/15 15:21	36	13.50	3.60	20.15	14.44	4.54	21.09	4.54	0.16	33.0	5.536	0.18	6.65	0.206
10/1/15 15:51	66	12.71	3.60	20.15	13.65	4.54	21.09	4.54	0.07	51.0	5.046	0.12	7.44	0.206

Well Designation:	MW-402
Date:	9/2/15

Figure 1

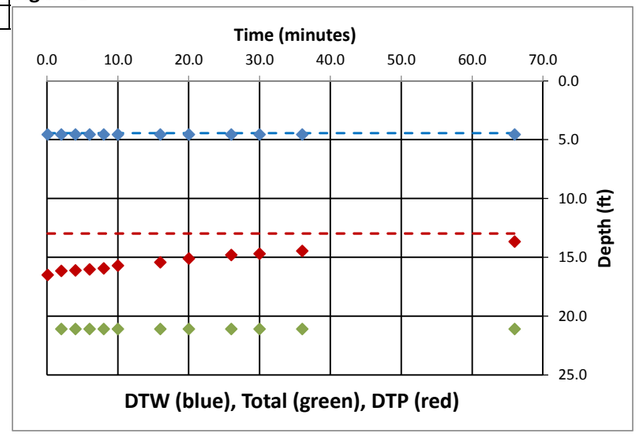
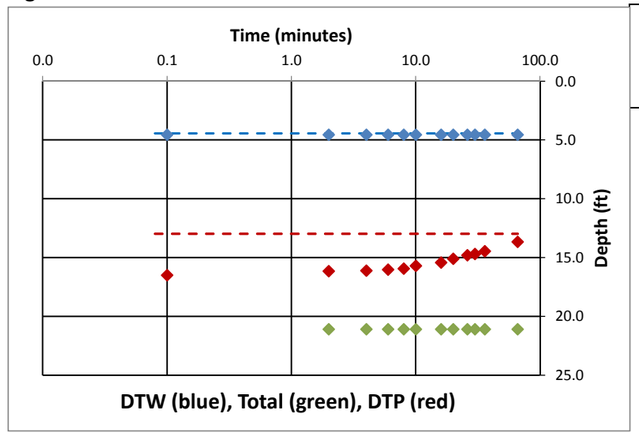


Figure 2



0.1	12.97
66	12.97
0.1	4.431
66	4.431

Figure 3

Q_n (ft³/d)	s_n (ft)
0	0
0.12	0.28

Drawdown Adjust.	
Δs_n (ft)	0

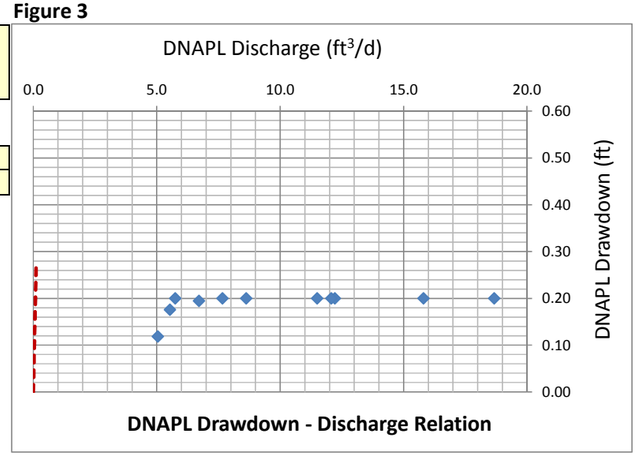
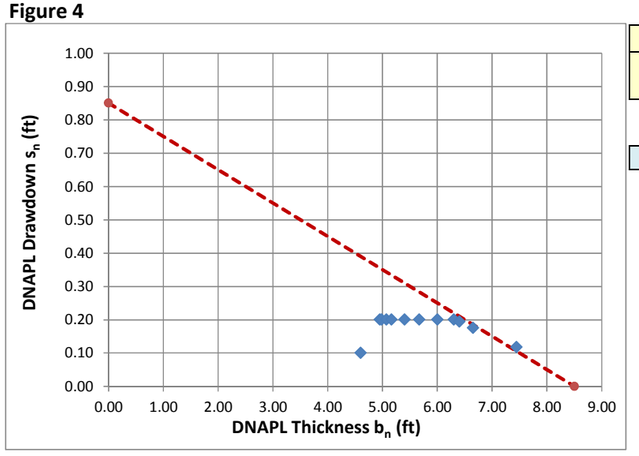


Figure 4



b_n	s_n
0	0.85
8.5	0

J-ratio	-0.100

Figure 5

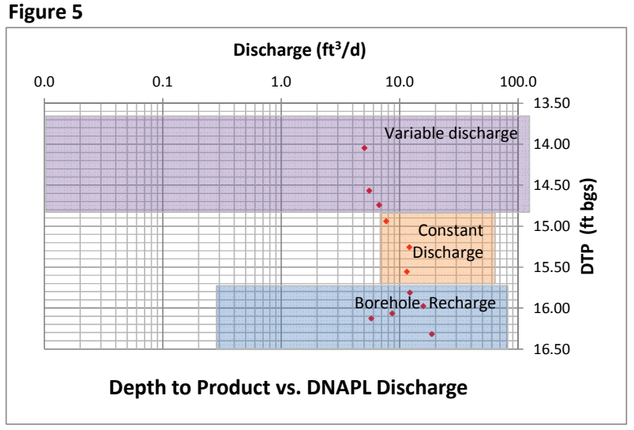
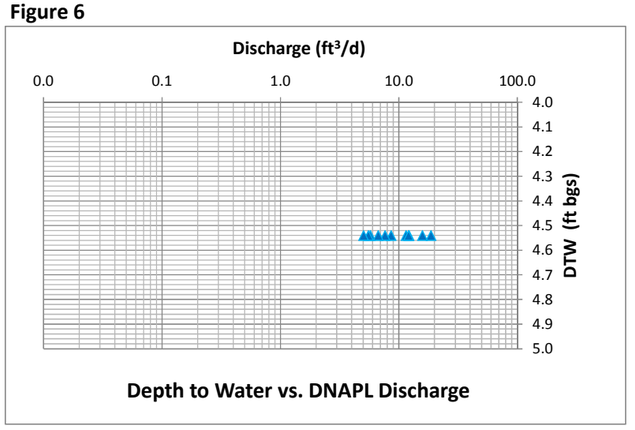


Figure 6



Well Designation:	MW-402
Date:	9/2/15

Figure 7

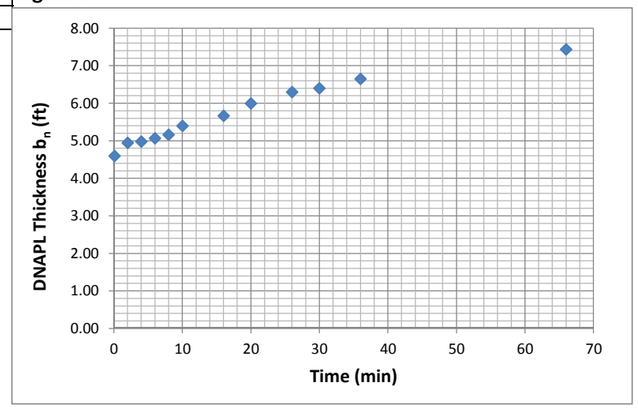


Figure 8

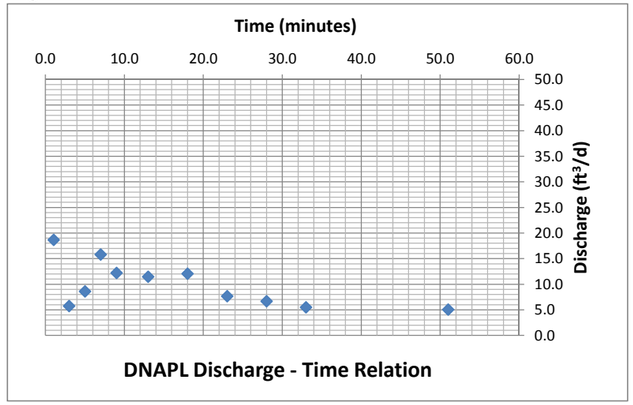


Figure 9

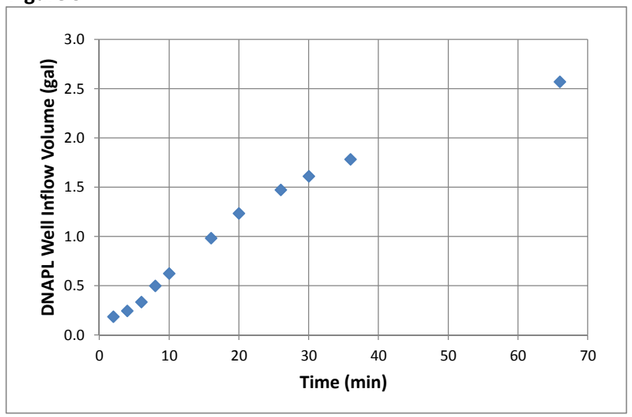
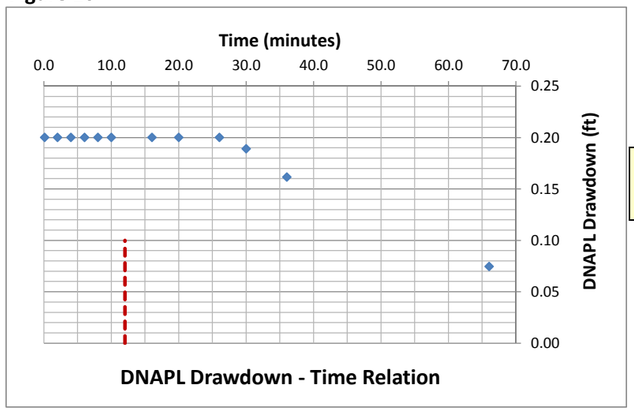


Figure 10



t (min)	s_n (ft)
12	0
12	0.1

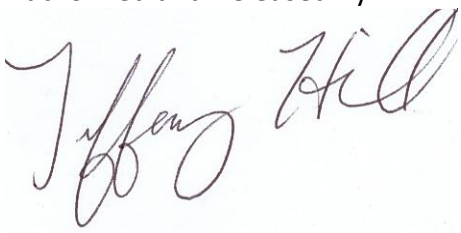
Appendix C
NAPL Physical Parameters Lab Report

ANALYTICAL REPORT

For:
Quanta - NAPL Recovery

ASL Report #: P3049
Project ID: 662566.HW.50.54
Attn: Kyle Block

Authorized and Released By:



Laboratory Project Manager
Tiffany Hill
(541) 758-0235 ext.23109
October 01, 2015

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Accredited in accordance with NELAP:
Oregon (100022)
Louisiana (05031)

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
P304901	RW3-5-GW-083115	08/31/15 10:50	09/04/15
P304902	MW-402-GW-083115	08/31/15 15:20	09/04/15
P304903	RW3-5-NAPL-090215	09/02/15 10:30	09/04/15
P304904	MW-402-NAPL-090215	09/02/15 13:50	09/04/15

CH2MHILL

Project Name/Title:	Quanta	**Project Number:**	399255.HM.T1
Document Name:	NAPL Parameters	**Preparer:**	Kara Cafferty/CVO
Project Manager:	Kyle Block/BOS	**Checker:**	Shannon Bartow/CVO
STC:	Trevre Andrews/MSP	**SME:**	Mike Niemet/CVO

		Preparer		Checker	
Date Prepared	**Rev. No.**	**Signature**	**Date**	**Signature**	**Date**
9/4/2015		Kara Cafferty	9/16/15	Shannon Bartow	9/17/15
STC/SME Signature/Date:		Michael Niemet	9/21/15		
LTR Signature/Date: (if required)					

Comments:

Information Requiring Confirmation:

CH2MHILL

Density and Specific Gravity by ASTM D1217 and Viscosity by ASTM D445

Quanta

Analysis By: KGC

Reviewed By: SMB

Sample Name	Matrix	Temperature	Specific Gravity	Density	Viscosity
		°F	-	g/mL	cP
RW3-5-GW	Water	50	1.00	1.00	1.14
		70	1.00	1.00	1.08
		100	1.00	0.99	0.87
MW-402-GW	Water	50	1.01	1.01	1.23
		70	1.00	1.00	1.13
		101	0.99	0.98	0.84
RW3-5-NAPL	NAPL	50	1.06	1.06	7.59
		70	1.05	1.05	5.00
		100	1.05	1.04	3.63
MW-402-NAPL	NAPL	50	1.11	1.11	267
		70	1.11	1.11	110
		100	1.11	1.10	25.3
MW-402-Emulsion	NAPL	50	1.01	1.01	35.3
		70	1.00	1.00	7.51
		100	0.99	0.99	2.38
Previous Results (2014)					
TW-01-GW	Water	50	1.00	1.00	1.06
		70	1.00	1.00	1.04
		100	1.00	0.99	0.94
TW-01-NAPL	NAPL	50	1.05	1.05	16.0
		70	1.04	1.04	10.1
		100	1.03	1.02	6.27
Previous Results (2013)					
MW123B	Water	50	0.99	0.99	1.06
		70.9	0.98	0.98	1.05
		100	0.97	0.96	0.89
MW130B	Water	50	1.03	1.03	1.13
		70.9	1.01	1.01	1.08
		100	1.00	0.99	0.95
MW123B-NP	NAPL	50	1.11	1.11	522
		70.9	1.11	1.11	244
		100	1.11	1.10	83.3
MW130B-NP	NAPL	50	1.06	1.06	15.4
		70.9	1.06	1.06	14.2
		100	1.06	1.05	12.2

Density and specific gravity measured by ASTM D1217

*Groundwater viscosity was measured by ASTM D445 with a glass viscometer. NAPL viscosity was measured with a Brookfield rotational viscometer.

Quality Control	
Density of millipore water measured at 70 ^{o} F	
Measured Density (g/mL):	0.9797
Published Density (g/mL):	0.9983
RPD:	-1.8791
Quality Control- Glass Tube Viscometer	
Viscosity of millipore water measured at 70 ^{o} F	
Measured Viscosity (cP):	1.066
Published Viscosity (cP):	1.000
RPD:	6.383
Quality Control- Rotational Viscometer	
Viscosity of QC Standard measured at 70 ^{o} F	
Measured Viscosity (cP):	9.4
Viscosity of QC Standard (cP):	9.3
RPD:	0.803

CH2MHILL Applied Sciences Lab
CHAIN OF CUSTODY RECORD
AND AGREEMENT TO PERFORM SERVICES

Chain of Custody Record

1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330
(541) 768-3120 Fax (541) 752-0276

Client Contact

Project Name: Quanta NAPL Recovery
Project # or PO #: 662566.HW.50.54
Company Name: CH2M
Address: 18 Tremont St, Suite 700
City/State/Zip: Boston, MA 02108
Project Manager: Kyle Block
Phone #: 617-626-7013
Report to email: kyle.block@ch2m.com

Analysis Turnaround Time

TAT is business days

TAT if different from below _____

☑ 14 days (STD) ☐ 3 day *
☐ 7 days * ☐ 2 days *
☐ 5 days * ☐ 1 day *

* (Surcharges will apply)

Preservation Used

Analysis Requested

For Lab Use Only:

Job / SDG No.: P3049
Custody Seals intact? ☐ Yes ☐ No
Cooler Temp: 8.9 °C ☐ Yes ☒ No
Therm ID No.: 173 Therm Exp. 10/15
Packing Material: Circle below
Ice Blue Ice Box Bubble Wrap
Radiological Screen? ☐ Yes ☒ No

Sample Identification (Limit of 20 characters)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (Water, Soil, Air)	Total # of Cont.	Density ASTM D1217	Viscosity ASTM D445							Sample Specific Notes:	Lab ID:
RW3-5-GW-083115	8/31/2015	10:50	G	W	1	X	X								1
MW-402-GW-083115	8/31/15	15:20	G	W	1	X	X								2
RW3-5-NAPL-090215	9/2/15	10:30	G	N	1	X	X								3
MW-402-NAPL-090215	9/2/15	13:50	G	N	1	X	X								4

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:

Are any samples from a listed EPA Hazardous Waste?

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be added if samples are retained longer than 30 day per client request, samples are returned to client, or classified as hazardous.)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ months

Sampled By: Kyle Block	Date/Time: 9/3/15 1800	Relinquished by: Kyle Block	Date/Time: 9/3/15 1800
Received by:	Date/Time:	Relinquished by:	Date/Time:
Received by:	Date/Time:	Relinquished by:	Date/Time:
Received in Laboratory by: Renee Castro	Date/Time: 9/4/15 10:00	Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☐ Other	Tracking #:

Special Instructions/QC Requirements

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Record

SDG ID: P3049 Date Received:09/04/15

Client/Project: Quanta NAPL Received By:JVP

Were custody seals intact and on the outside of the cooler?		☑ Yes	☐ No	☐ N/A
Shipping Record:		☐ Hand Delivered	☑ On File	☐ COC
Radiological Screening for DoD		☐ Yes	☐ No	☑ N/A
Packing Material:		☐ Hand Delivered	☐ Ice ☐ Blue Ice	☑ Box
Temp OK? (<6C) Therm ID: TH173 Exp. 10/15	18.9 °C	☑ Yes	☐ No	☐ N/A
Was a Chain of Custody (CoC) Provided?		☑ Yes	☐ No	☐ N/A
Was the CoC correctly filled out (If No, document below)		☑ Yes	☐ No	☐ N/A
Did sample labels agree with COC? (If No, document below)		☑ Yes	☐ No	☐ N/A
Did the CoC list a correct bottle count and the preservative types (No=Correct on CoC)		☑ Yes	☐ No	☐ N/A
Were the sample containers in good condition (broken or leaking)?		☑ Yes	☐ No	☐ N/A
Was enough sample volume provided for analysis? (If No, document below)		☑ Yes	☐ No	☐ N/A
Containers supplied by ASL?		☑ Yes	☐ No	☐ N/A
Any sample with < 1/2 holding time remaining? If so contact LPM		☐ Yes	☑ No	☐ N/A
Samples have multi-phase? If yes, document on SRER		☐ Yes	☑ No	☐ N/A
All water VOCs free of air bubbles? No, document on SRER		☐ Yes	☐ No	☑ N/A
pH of all samples met criteria on receipt? If "No", preserve and document below.		☐ Yes	☐ No	☑ N/A
Dissolved/Soluble metals filtered in the field?		☐ Yes	☐ No	☑ N/A
Dissolved/Soluble metals have sediment in bottom of container? If so document below.		☐ Yes	☐ No	☑ N/A

Preservation Adjustment

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials/Time	24 hour pH check Initials/Time

Did pH of all metals samples preserved upon receipt meet criteria 24 hours after preservation? ☐ Yes ☐ No

Sample Exception Report (The following exceptions were noted)

Client was notified on: Client contact:

Resolution to Exception:

Appendix D
Waste Characterization and Disposal

013642781JJK

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: NJD 981 139 371
2. Page 1 of: 1
3. Emergency Response Phone: (800) 535-5053
4. Manifest Tracking Number: 013642781 JJK

GENERATOR

5. Generator's Name and Mailing Address: HONEYWELL INTERNATIONAL INC
6100 PHILADELPHIA PIKE
CLAYMONT, DE 19703
Generator's Phone: (302) 791-6738

Generator's Site Address (if different than mailing address):
163 RIVER ROAD
EDGEWATER, NJ 07020

6. Transporter 1 Company Name: EQ NORTHEAST, INC.
U.S. EPA ID Number: MAD 084 814 136

7. Transporter 2 Company Name: EQ Industrial Services
U.S. EPA ID Number: MIR435642742

8. Designated Facility Name and Site Address: MICHIGAN DISPOSAL WASTE TREATMEI
49350 N I-94 SERVICE DRIVE
BELLEVILLE, MI 48111
Facility's Phone: (800) 592-5489
U.S. EPA ID Number: MID 000 724 831

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. Non Hazardous Solid Waste, Not DOT Not RCRA Regulated, None, None, None	20	DM	10,000	P	029L
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. C142137MDI / (S) Soil from Sampling Drilling Event

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Austin Hardcastle as Agent of Honeywell International Inc.
Signature: Austin Hardcastle as Agent of Honeywell International Inc
Month: 10 Day: 19 Year: 15

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Joseph J. Dancer
Signature:
Month: 10 Day: 19 Year: 15

Transporter 2 Printed/Typed Name: Tony A. Stewart
Signature:
Month: 10 Day: 21 Year: 15

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
LIW			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name:
Signature:
Month: 10 Day: 21 Year:

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

013642782JJK

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: NJD 981 139 371
2. Page 1 of: 1
3. Emergency Response Phone: (800) 535-5053
4. Manifest Tracking Number: 013642782 JJK

GENERATOR

5. Generator's Name and Mailing Address: HONEYWELL INTERNATIONAL INC
6100 PHILADELPHIA PIKE
CLAYMONT, DE 19703
Generator's Phone: (302) 791-6738

Generator's Site Address (if different than mailing address):
163 RIVER ROAD
EDGEWATER, NJ 07020

6. Transporter 1 Company Name: EQ NORTHEAST, INC.
U.S. EPA ID Number: MAD 084 814 136

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: EQ DETROIT, INC.
1923 FREDERICK
DETROIT, MI 48211
Facility's Phone: (313) 347-1300
U.S. EPA ID Number: MID 980 991 566

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. NA3082, Hazardous waste, liquid, n.o.s., (Benzene), 9, PGIII, ERG #171	14	DM	700	G	D018
	2. Non Hazardous Solid Waste, Not DOT Not RCRA Regulated, None, None, None	003	DM	225	P	
	3. Non Hazardous Liquid Waste, Not DOT Not RCRA Regulated, None, None, None	002	DM	110	G	029L
	4.					

14. Special Handling Instructions and Additional Information
1. J150019DET / (L,E) Water with NAPL 2. J150018DET / (S) PPE & Plastic from Drilling 3. J150020DET / (L) Drilling Fluid/Mud

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Austin Hardcastle as Agent of Honeywell International Inc.
Signature: Austin Hardcastle as Agent of Honeywell International Inc.
Month: 10 Day: 19 Year: 15

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Joseph J. Doneski
Signature:
Month: 10 Day: 19 Year: 15

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H141	NONE	LIW	

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Brandy Haught
Signature:
Month: 10 Day: 21 Year: 15

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

New Jersey ACCUTEST LABORATORIES

Reissue #1
11/04/15

Technical Report for

Honeywell International Inc.

CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

Accutest Job Number: JC1982

Sampling Date: 08/19/15

Report to:

CH2M Hill

Theresa.Himmer@CH2M.com

ATTN: Theresa Himmer

Total number of pages in report: **65**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Nancy Cole
Laboratory Director

Client Service contact: Marty Vitanza 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TN, TX, VA, WV, DoD ELAP (L-A-B L2248)

October 22, 2015

Mr. Kyle Block
CH2M Hill
18 Tremont Street
Suite 700
Boston, MA 02108

Re: Extraction Method Documentation Correction

In a recent internal review, Accutest identified some extraction method data entry errors for the projects and samples listed below. The proper extraction method was used, however the wrong method reference was entered in LIMS. The extraction method documentation change has no impact on the reported data or associated quality control. The extraction methods in use were approved and certified methods, and the laboratory adhered to all quality control requirements for these methods.

Project	Sample Numbers
CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ	JC1982-1, -2, -3

The LIMS has been corrected so that the extraction method is in line with the extraction method as documented on the raw data. We are not planning to automatically reissue these reports, however if you need a re-issued report or EDD, please let us know, and we'll be happy to do so.

A corrective action has been generated to prevent issues of this type in the future. We apologize for any inconvenience that this may have caused. Should you have any further questions or require additional information, please do not hesitate to contact me.

Sincerely,

Nancy L. Cole

Nancy Cole
Laboratory Director, Accutest, NJ
732-329-0200, ext 1301

Sections: 1 2 3 4

Table of Contents

-1-

Sample Summary

Honeywell International Inc.

Job No: JC1982

CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC1982-1	08/19/15	10:30	AH	08/20/15	SO	Soil	IDW-SO-1-081915
JC1982-1A	08/19/15	10:30	AH	08/20/15	SO	Soil	IDW-SO-1-081915
JC1982-2	08/19/15	10:45	AH	08/20/15	SO	Soil	IDW-SO-2-081915
JC1982-2A	08/19/15	10:45	AH	08/20/15	SO	Soil	IDW-SO-2-081915
JC1982-3	08/19/15	11:00	AH	08/20/15	SO	Soil	IDW-SO-3-081915
JC1982-3A	08/19/15	11:00	AH	08/20/15	SO	Soil	IDW-SO-3-081915
JC1982-4	08/19/15	11:15	AH	08/20/15	AQ	Water	IDW-AQ-081915

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: JC1982
Account: Honeywell International Inc.
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ
Collected: 08/19/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC1982-1	**IDW-SO-1-081915**					
Benzene [a]		7920	3000	790	ug/kg	SW846 8260C
Ethylbenzene [a]		21700	5900	970	ug/kg	SW846 8260C
Isopropylbenzene [a]		5310 J	12000	630	ug/kg	SW846 8260C
Styrene [a]		12700	12000	1100	ug/kg	SW846 8260C
Toluene [a]		35400	5900	1200	ug/kg	SW846 8260C
m,p-Xylene [a]		55500	5900	2100	ug/kg	SW846 8260C
o-Xylene [a]		25700	5900	1600	ug/kg	SW846 8260C
Xylene (total) [a]		81200	5900	1600	ug/kg	SW846 8260C
Total TIC, Volatile		4165000 J			ug/kg	
2,4-Dimethylphenol		2450	210	93	ug/kg	SW846 8270D
3&4-Methylphenol		452	85	47	ug/kg	SW846 8270D
Phenol		293	85	28	ug/kg	SW846 8270D
Acenaphthene		67400	2100	430	ug/kg	SW846 8270D
Acenaphthylene		9770	210	32	ug/kg	SW846 8270D
Anthracene		43900	2100	480	ug/kg	SW846 8270D
Benzo(a)anthracene		18100	210	41	ug/kg	SW846 8270D
Benzo(a)pyrene		13600	210	51	ug/kg	SW846 8270D
Benzo(b)fluoranthene		14500	210	42	ug/kg	SW846 8270D
Benzo(g,h,i)perylene		7580	210	70	ug/kg	SW846 8270D
Benzo(k)fluoranthene		5730	210	68	ug/kg	SW846 8270D
1,1'-Biphenyl		25100	4200	420	ug/kg	SW846 8270D
Carbazole		12900	420	47	ug/kg	SW846 8270D
Chrysene		18300	210	52	ug/kg	SW846 8270D
Dibenzo(a,h)anthracene		1640	42	10	ug/kg	SW846 8270D
Dibenzofuran		53100	4200	340	ug/kg	SW846 8270D
bis(2-Ethylhexyl)phthalate		579	85	14	ug/kg	SW846 8270D
Fluoranthene		81200	2100	740	ug/kg	SW846 8270D
Fluorene		72000	2100	1600	ug/kg	SW846 8270D
Indeno(1,2,3-cd)pyrene		7740	210	68	ug/kg	SW846 8270D
2-Methylnaphthalene		184000	4200	490	ug/kg	SW846 8270D
Naphthalene		661000	8500	1300	ug/kg	SW846 8270D
Phenanthrene		171000	2100	450	ug/kg	SW846 8270D
Pyrene		55000	2100	480	ug/kg	SW846 8270D
Total TIC, Semi-Volatile		59810 J			ug/kg	
delta-BHC		7.9	0.77	0.30	ug/kg	SW846 8081B
4,4'-DDT [b]		62.5	0.77	0.29	ug/kg	SW846 8081B
Endosulfan sulfate [b]		38.4	0.77	0.44	ug/kg	SW846 8081B
Endrin ketone		23.4	0.77	0.40	ug/kg	SW846 8081B
JC1982-1A	**IDW-SO-1-081915**					
Corrosivity as pH		7.60 NC			su	SW846 CHAP7
Ignitability (Flashpoint)		> 200			Deg. F	SW846 CHAP7/ASTM D93

Summary of Hits

Job Number: JC1982
Account: Honeywell International Inc.
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ
Collected: 08/19/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Benzene		0.139	0.0025	0.0012	mg/l	SW846 8260C
3&4-Methylphenol		0.0168 J	0.020	0.0067	mg/l	SW846 8270D
Pyridine		0.0047 J	0.020	0.0027	mg/l	SW846 8270D
JC1982-2	**IDW-SO-2-081915**					
Benzene [a]		26500	2900	760	ug/kg	SW846 8260C
Ethylbenzene [a]		116000	5700	940	ug/kg	SW846 8260C
Isopropylbenzene [a]		10300 J	11000	610	ug/kg	SW846 8260C
Methylcyclohexane [a]		5170 J	11000	1300	ug/kg	SW846 8260C
Toluene [a]		24500	5700	1200	ug/kg	SW846 8260C
m,p-Xylene [a]		185000	5700	2000	ug/kg	SW846 8260C
o-Xylene [a]		86800	5700	1600	ug/kg	SW846 8260C
Xylene (total) [a]		272000	5700	1600	ug/kg	SW846 8260C
Total TIC, Volatile		6868000 J			ug/kg	
Acenaphthene		13600	470	94	ug/kg	SW846 8270D
Acenaphthylene		776	47	7.0	ug/kg	SW846 8270D
Acetophenone		366	230	15	ug/kg	SW846 8270D
Anthracene		11300	470	100	ug/kg	SW846 8270D
Benzo(a)anthracene		14800	470	90	ug/kg	SW846 8270D
Benzo(a)pyrene		13200	470	110	ug/kg	SW846 8270D
Benzo(b)fluoranthene		13900	470	92	ug/kg	SW846 8270D
Benzo(g,h,i)perylene		7400	470	150	ug/kg	SW846 8270D
Benzo(k)fluoranthene		5890	470	150	ug/kg	SW846 8270D
1,1'-Biphenyl		1200	93	9.2	ug/kg	SW846 8270D
Carbazole		1740	93	10	ug/kg	SW846 8270D
Chrysene		15000	470	110	ug/kg	SW846 8270D
Dibenzo(a,h)anthracene		1720	47	11	ug/kg	SW846 8270D
Dibenzofuran		7090	930	76	ug/kg	SW846 8270D
Fluoranthene		37500	470	160	ug/kg	SW846 8270D
Fluorene		12400	470	350	ug/kg	SW846 8270D
Indeno(1,2,3-cd)pyrene		8090	470	150	ug/kg	SW846 8270D
2-Methylnaphthalene		2530	93	11	ug/kg	SW846 8270D
Naphthalene		7840	470	69	ug/kg	SW846 8270D
Phenanthrene		40100	470	99	ug/kg	SW846 8270D
Pyrene		28000	470	110	ug/kg	SW846 8270D
Total TIC, Semi-Volatile		45640 J			ug/kg	
JC1982-2A	**IDW-SO-2-081915**					
Corrosivity as pH		7.62 NC			su	SW846 CHAP7
Ignitability (Flashpoint)		> 200			Deg. F	SW846 CHAP7/ASTM D93
Benzene		0.0482	0.0025	0.0012	mg/l	SW846 8260C

Summary of Hits

Job Number: JC1982
Account: Honeywell International Inc.
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ
Collected: 08/19/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC1982-3	**IDW-SO-3-081915**					
3&4-Methylphenol [c]		157	140	77	ug/kg	SW846 8270D
Phenol [c]		99.7 J	140	45	ug/kg	SW846 8270D
Acenaphthene		17800	690	140	ug/kg	SW846 8270D
Acenaphthylene [c]		1190	69	10	ug/kg	SW846 8270D
Anthracene		21400	690	150	ug/kg	SW846 8270D
Benzo(a)anthracene		57900	690	130	ug/kg	SW846 8270D
Benzo(a)pyrene		62200	690	170	ug/kg	SW846 8270D
Benzo(b)fluoranthene		68000	690	140	ug/kg	SW846 8270D
Benzo(g,h,i)perylene		33900	690	230	ug/kg	SW846 8270D
Benzo(k)fluoranthene		24900	690	220	ug/kg	SW846 8270D
1,1'-Biphenyl [c]		554	140	14	ug/kg	SW846 8270D
Carbazole		9290	1400	150	ug/kg	SW846 8270D
Chrysene		57900	690	170	ug/kg	SW846 8270D
Dibenzo(a,h)anthracene		10200	690	170	ug/kg	SW846 8270D
Dibenzofuran [c]		4700	140	11	ug/kg	SW846 8270D
Fluoranthene		92400	6900	2400	ug/kg	SW846 8270D
Fluorene		9540	690	520	ug/kg	SW846 8270D
Indeno(1,2,3-cd)pyrene		39400	690	220	ug/kg	SW846 8270D
2-Methylnaphthalene [c]		2470	140	16	ug/kg	SW846 8270D
Naphthalene [c]		5860	69	10	ug/kg	SW846 8270D
Phenanthrene		64300	6900	1500	ug/kg	SW846 8270D
Pyrene		75200	6900	1600	ug/kg	SW846 8270D
Total TIC, Semi-Volatile		18280 J			ug/kg	
4,4'-DDT [b]		17.4	0.66	0.25	ug/kg	SW846 8081B
Endrin aldehyde [b]		26.0	0.66	0.49	ug/kg	SW846 8081B
JC1982-3A	**IDW-SO-3-081915**					
Corrosivity as pH		7.11 NC			su	SW846 CHAP7
Ignitability (Flashpoint)		> 200			Deg. F	SW846 CHAP7/ASTM D93
Hexachlorobenzene		0.0064 J	0.020	0.0042	mg/l	SW846 8270D
JC1982-4	**IDW-AQ-081915**					
Acetone		88.6	20	6.6	ug/l	SW846 8260C
Benzene		195	1.0	0.47	ug/l	SW846 8260C
Bromodichloromethane		0.94 J	2.0	0.45	ug/l	SW846 8260C
2-Butanone (MEK)		14.4 J	20	11	ug/l	SW846 8260C
Carbon disulfide		0.68 J	4.0	0.51	ug/l	SW846 8260C
Chloroform		1.9 J	2.0	0.37	ug/l	SW846 8260C
Dibromochloromethane		0.39 J	2.0	0.31	ug/l	SW846 8260C
1,2-Dichlorobenzene		2.2	2.0	0.37	ug/l	SW846 8260C
Ethylbenzene		144	2.0	0.54	ug/l	SW846 8260C

Summary of Hits

Job Number: JC1982
Account: Honeywell International Inc.
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ
Collected: 08/19/15

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Isopropylbenzene	11.3	2.0	0.47	ug/l	SW846 8260C
Methylcyclohexane	1.7 J	10	0.44	ug/l	SW846 8260C
4-Methyl-2-pentanone(MIBK)	7.6 J	10	2.0	ug/l	SW846 8260C
Styrene	86.4	2.0	0.54	ug/l	SW846 8260C
Toluene	218	2.0	0.32	ug/l	SW846 8260C
m,p-Xylene	326	2.0	0.75	ug/l	SW846 8260C
o-Xylene	208	2.0	0.33	ug/l	SW846 8260C
Xylene (total)	534	2.0	0.33	ug/l	SW846 8260C
Total TIC, Volatile	4757 J			ug/l	
2,4-Dimethylphenol	85.0	6.3	2.3	ug/l	SW846 8270D
2-Methylphenol	4.4	2.5	1.6	ug/l	SW846 8270D
Acenaphthene	254	50	15	ug/l	SW846 8270D
Acenaphthylene	21.2	1.3	0.25	ug/l	SW846 8270D
Anthracene	29.4	1.3	0.24	ug/l	SW846 8270D
Benzo(g,h,i)perylene	1.2 J	1.3	0.39	ug/l	SW846 8270D
1,1'-Biphenyl	70.4	1.3	0.34	ug/l	SW846 8270D
Carbazole	199	50	8.4	ug/l	SW846 8270D
Chrysene	3.6	1.3	0.20	ug/l	SW846 8270D
1,4-Dioxane	1.6	1.3	0.89	ug/l	SW846 8270D
Dibenzofuran	185 J	250	11	ug/l	SW846 8270D
Fluoranthene	29.0	1.3	0.20	ug/l	SW846 8270D
Fluorene	160	50	14	ug/l	SW846 8270D
2-Methylnaphthalene	742	50	15	ug/l	SW846 8270D
Naphthalene	4030	50	13	ug/l	SW846 8270D
Phenanthrene	220	50	9.3	ug/l	SW846 8270D
Pyrene	17.0	1.3	0.24	ug/l	SW846 8270D
Benzo(a)anthracene	1.09	0.063	0.023	ug/l	SW846 8270D BY SIM
Benzo(a)pyrene	2.53	0.063	0.037	ug/l	SW846 8270D BY SIM
Benzo(b)fluoranthene	3.64	0.13	0.026	ug/l	SW846 8270D BY SIM
Benzo(k)fluoranthene	0.809	0.13	0.024	ug/l	SW846 8270D BY SIM
Dibenzo(a,h)anthracene	0.394	0.13	0.044	ug/l	SW846 8270D BY SIM
Indeno(1,2,3-cd)pyrene	1.14	0.13	0.039	ug/l	SW846 8270D BY SIM
Total TIC, Semi-Volatile	1418 J			ug/l	
gamma-BHC (Lindane) [d]	0.042	0.0074	0.0039	ug/l	SW846 8081B
Endrin ketone [e]	0.024	0.0074	0.0035	ug/l	SW846 8081B
Barium	246	200		ug/l	SW846 6010C
Calcium	922000	25000		ug/l	SW846 6010C
Chromium	205	10		ug/l	SW846 6010C
Copper	33.6	10		ug/l	SW846 6010C
Iron	1240	100		ug/l	SW846 6010C
Lead [f]	24.4	15		ug/l	SW846 6010C
Manganese	16.1	15		ug/l	SW846 6010C
Potassium	642000	50000		ug/l	SW846 6010C
Selenium	18.8	10		ug/l	SW846 6010C
Sodium	814000	50000		ug/l	SW846 6010C

Summary of Hits

Job Number: JC1982
Account: Honeywell International Inc.
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ
Collected: 08/19/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Corrosivity as pH		12.45 NC			su	SW846 CHAP7
Ignitability (Flashpoint)		> 200			Deg. F	SW846 1010A/ASTM D93

(a) Diluted due to high concentration of non-target compound.
(b) More than 40 % RPD for detected concentrations between the two GC columns.
(c) Dilution required due to viscosity of the extract matrix
(d) There is no additional sample for re-extraction. More than 40 % RPD for detected concentrations between the two GC columns.
(e) There is no additional sample for re-extraction.
(f) Elevated detection limit due to dilution required for high interfering element.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	IDW-SO-1-081915		
Lab Sample ID:	JC1982-1	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8260C	**Percent Solids:**	77.4
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E228675.D	1	08/28/15	TDN	n/a	n/a	VE10012
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.2 g	10.0 ml	2.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	59000	13000	ug/kg	
71-43-2	Benzene	7920	3000	790	ug/kg	
74-97-5	Bromochloromethane	ND	30000	1800	ug/kg	
75-27-4	Bromodichloromethane	ND	12000	930	ug/kg	
75-25-2	Bromoform	ND	30000	1400	ug/kg	
74-83-9	Bromomethane	ND	30000	2200	ug/kg	
78-93-3	2-Butanone (MEK)	ND	59000	11000	ug/kg	
75-15-0	Carbon disulfide	ND	12000	1400	ug/kg	
56-23-5	Carbon tetrachloride	ND	12000	1400	ug/kg	
108-90-7	Chlorobenzene	ND	12000	920	ug/kg	
75-00-3	Chloroethane	ND	30000	2900	ug/kg	
67-66-3	Chloroform	ND	12000	890	ug/kg	
74-87-3	Chloromethane	ND	30000	1600	ug/kg	
110-82-7	Cyclohexane	ND	12000	1900	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	12000	3200	ug/kg	
124-48-1	Dibromochloromethane	ND	12000	1200	ug/kg	
106-93-4	1,2-Dibromoethane	ND	5900	780	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	5900	720	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	5900	930	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	5900	1300	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	30000	2100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5900	840	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5900	800	ug/kg	
75-35-4	1,1-Dichloroethene	ND	5900	3500	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	5900	4600	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	5900	3500	ug/kg	
78-87-5	1,2-Dichloropropane	ND	12000	1400	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	12000	700	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	12000	1100	ug/kg	
100-41-4	Ethylbenzene	21700	5900	970	ug/kg	
76-13-1	Freon 113	ND	30000	2700	ug/kg	
591-78-6	2-Hexanone	ND	30000	8000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8260C **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	5310	12000	630	ug/kg	J
79-20-9	Methyl Acetate	ND	30000	5100	ug/kg	
108-87-2	Methylcyclohexane	ND	12000	1300	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	5900	910	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	30000	2700	ug/kg	
75-09-2	Methylene chloride	ND	30000	5800	ug/kg	
100-42-5	Styrene	12700	12000	1100	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	12000	1000	ug/kg	
127-18-4	Tetrachloroethene	ND	12000	1800	ug/kg	
108-88-3	Toluene	35400	5900	1200	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	30000	1000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	30000	1000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	12000	890	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	12000	870	ug/kg	
79-01-6	Trichloroethene	ND	5900	870	ug/kg	
75-69-4	Trichlorofluoromethane	ND	30000	1500	ug/kg	
75-01-4	Vinyl chloride	ND	12000	1200	ug/kg	
	m,p-Xylene	55500	5900	2100	ug/kg	
95-47-6	o-Xylene	25700	5900	1600	ug/kg	
1330-20-7	Xylene (total)	81200	5900	1600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-122%
17060-07-0	1,2-Dichloroethane-D4	87%		68-124%
2037-26-5	Toluene-D8	98%		77-125%
460-00-4	4-Bromofluorobenzene	100%		72-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	C3 alkyl benzene	15.92	38000	ug/kg	J
95-63-6	Benzene, 1,2,4-trimethyl-	16.45	61000	ug/kg	JN
496-11-7	Indane	17.23	250000	ug/kg	JN
95-13-6	Indene	17.49	140000	ug/kg	JN
	1H-Indene-dihydro-methyl- isomer	18.48	45000	ug/kg	J
622-76-4	Benzene, 1-butynyl-	18.77	40000	ug/kg	JN
2177-47-1	2-Methylindene	18.91	62000	ug/kg	JN
91-20-3	Naphthalene	19.52	3000000	ug/kg	JN
95-15-8	Benzo[b]thiophene	19.68	49000	ug/kg	JN
	Naphthalene, methyl- isomer	20.87	360000	ug/kg	J

ND = Not detected MDL = Method Detection Limit
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-SO-1-081915		
Lab Sample ID:	JC1982-1	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8260C	**Percent Solids:**	77.4
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

VOA TCL List

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Naphthalene, methyl- isomer	21.15	120000	ug/kg	J
	Total TIC, Volatile		4165000	ug/kg	J
	Total Alkanes		0	ug/kg	

(a) Diluted due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P20827.D	1	08/28/15	AD	08/26/15	OP86719	E5P1070
Run #2	5P20853.D	5	08/28/15	AP	08/26/15	OP86719	E5P1071
Run #3	5P20854.D	50	08/28/15	AP	08/26/15	OP86719	E5P1071
Run #4	5P20900.D	200	09/01/15	SD	08/26/15	OP86719	E5P1073

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml
Run #3	30.4 g	1.0 ml
Run #4	30.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	85	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	79	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	79	ug/kg	
105-67-9	2,4-Dimethylphenol	2450	210	93	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	180	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	35	ug/kg	
95-48-7	2-Methylphenol	ND	85	56	ug/kg	
	3&4-Methylphenol	452	85	47	ug/kg	
88-75-5	2-Nitrophenol	ND	210	39	ug/kg	
100-02-7	4-Nitrophenol	ND	420	130	ug/kg	
87-86-5	Pentachlorophenol	ND	210	100	ug/kg	
108-95-2	Phenol	293	85	28	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	99	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	94	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	66	ug/kg	
83-32-9	Acenaphthene	67400 [a]	2100	430	ug/kg	
208-96-8	Acenaphthylene	9770 [b]	210	32	ug/kg	
98-86-2	Acetophenone	ND	210	13	ug/kg	
120-12-7	Anthracene	43900 [a]	2100	480	ug/kg	
1912-24-9	Atrazine	ND	85	25	ug/kg	
56-55-3	Benzo(a)anthracene	18100 [b]	210	41	ug/kg	
50-32-8	Benzo(a)pyrene	13600 [b]	210	51	ug/kg	
205-99-2	Benzo(b)fluoranthene	14500 [b]	210	42	ug/kg	
191-24-2	Benzo(g,h,i)perylene	7580 [b]	210	70	ug/kg	
207-08-9	Benzo(k)fluoranthene	5730 [b]	210	68	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	85	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	85	17	ug/kg	
92-52-4	1,1'-Biphenyl	25100 [a]	4200	420	ug/kg	

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Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	85	9.6	ug/kg	
106-47-8	4-Chloroaniline	ND	210	14	ug/kg	
86-74-8	Carbazole	12900 b	420	47	ug/kg	
105-60-2	Caprolactam	ND	85	27	ug/kg	
218-01-9	Chrysene	18300 b	210	52	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	85	28	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	85	9.8	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	85	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	85	9.0	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	9.0	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	85	23	ug/kg	
123-91-1	1,4-Dioxane	ND	42	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1640	42	10	ug/kg	
132-64-9	Dibenzofuran	53100 a	4200	340	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	85	11	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	85	11	ug/kg	
84-66-2	Diethyl phthalate	ND	85	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	85	8.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	579	85	14	ug/kg	
206-44-0	Fluoranthene	81200 a	2100	740	ug/kg	
86-73-7	Fluorene	72000 a	2100	1600	ug/kg	
118-74-1	Hexachlorobenzene	ND	85	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	16	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	7740 b	210	68	ug/kg	
78-59-1	Isophorone	ND	85	7.3	ug/kg	
91-57-6	2-Methylnaphthalene	184000 a	4200	490	ug/kg	
88-74-4	2-Nitroaniline	ND	210	20	ug/kg	
99-09-2	3-Nitroaniline	ND	210	14	ug/kg	
100-01-6	4-Nitroaniline	ND	210	12	ug/kg	
91-20-3	Naphthalene	661000 c	8500	1300	ug/kg	
98-95-3	Nitrobenzene	ND	85	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	85	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	10	ug/kg	
85-01-8	Phenanthrene	171000 a	2100	450	ug/kg	
129-00-0	Pyrene	55000 a	2100	480	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	7.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	81%	96%	100%	22-121%
4165-62-2	Phenol-d5	84%	99%	101%	27-119%
118-79-6	2,4,6-Tribromophenol	154%	146%	136%	17-158%
4165-60-0	Nitrobenzene-d5	196% [d]	109%	108%	33-127%
321-60-8	2-Fluorobiphenyl	80%	102%	112%	41-121%
1718-51-0	Terphenyl-d14	94%	111%	128%	44-137%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	C3 alkyl benzene	5.05	1700	ug/kg	J
	C3 alkyl benzene	5.38	5100	ug/kg	J
271-89-6	Benzofuran	5.41	1500	ug/kg	JN
	C3 alkyl benzene	5.63	1700	ug/kg	J
496-11-7	Indane	5.77	7400	ug/kg	JN
95-13-6	Indene	5.86	8100	ug/kg	JN
	C4 alkyl benzene	5.92	1600	ug/kg	J
90-12-0	Naphthalene, 1-methyl-	8.07	750	ug/kg	JN
	Naphthalene ethyl	8.59	2400	ug/kg	J
	Naphthalene dimethyl	8.69	3800	ug/kg	J
	Naphthalene dimethyl	8.78	4200	ug/kg	J
	Naphthalene dimethyl	8.81	2100	ug/kg	J
	Naphthalene dimethyl	8.91	2900	ug/kg	J
	Naphthalene trimethyl	9.31	1200	ug/kg	J
	unknown	9.37	1100	ug/kg	J
	Naphthalene trimethyl	9.57	1100	ug/kg	J
	Naphthalene trimethyl	9.60	890	ug/kg	J
	Naphthalene trimethyl	9.68	1400	ug/kg	J
	unknown	9.94	1700	ug/kg	J
	unknown	9.96	1300	ug/kg	J
	unknown	10.05	1600	ug/kg	J
	Pyrene methyl	13.57	1300	ug/kg	J
	Pyrene methyl	13.67	670	ug/kg	J
	unknown PAH substance	16.61	1200	ug/kg	J
	unknown PAH substance	16.86	3100	ug/kg	J
	Total TIC, Semi-Volatile		59810	ug/kg	J
	Total Alkanes		0	ug/kg	

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Result is from Run# 4

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-SO-1-081915		
Lab Sample ID:	JC1982-1	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	77.4
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q

(d) Outside control limits due to matrix interference.

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8081B SW846 3546 **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G59942.D	1	09/03/15	YD	08/24/15	OP86662	G4G1565
Run #2							

	Initial Weight	Final Volume
Run #1	16.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.77	0.69	ug/kg	
319-84-6	alpha-BHC	ND	0.77	0.51	ug/kg	
319-85-7	beta-BHC	ND	0.77	0.47	ug/kg	
319-86-8	delta-BHC	7.9	0.77	0.30	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.77	0.35	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.77	0.41	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.77	0.59	ug/kg	
57-74-9	Chlordane (alpha and gamma)	ND	0.77	0.41	ug/kg	
60-57-1	Dieldrin	ND	0.77	0.60	ug/kg	
72-54-8	4,4'-DDD	ND	0.77	0.28	ug/kg	
72-55-9	4,4'-DDE	ND	0.77	0.26	ug/kg	
50-29-3	4,4'-DDT [a]	62.5	0.77	0.29	ug/kg	
72-20-8	Endrin	ND	0.77	0.27	ug/kg	
1031-07-8	Endosulfan sulfate [a]	38.4	0.77	0.44	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.77	0.57	ug/kg	
959-98-8	Endosulfan-I	ND	0.77	0.25	ug/kg	
33213-65-9	Endosulfan-II	ND	0.77	0.73	ug/kg	
76-44-8	Heptachlor	ND	0.77	0.63	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.77	0.32	ug/kg	
72-43-5	Methoxychlor	ND	1.5	0.43	ug/kg	
53494-70-5	Endrin ketone	23.4	0.77	0.40	ug/kg	
8001-35-2	Toxaphene	ND	19	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		24-136%
877-09-8	Tetrachloro-m-xylene	67%		24-136%
2051-24-3	Decachlorobiphenyl	674% [b]		10-153%
2051-24-3	Decachlorobiphenyl	739% [b]		10-153%

(a) More than 40 % RPD for detected concentrations between the two GC columns.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8082A SW846 3546 **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G119163.D	1	08/28/15	DG	08/24/15	OP86661	G2G3447
Run #2							

	Initial Weight	Final Volume
Run #1	16.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	38	12	ug/kg	
11104-28-2	Aroclor 1221	ND	38	23	ug/kg	
11141-16-5	Aroclor 1232	ND	38	13	ug/kg	
53469-21-9	Aroclor 1242	ND	38	17	ug/kg	
12672-29-6	Aroclor 1248	ND	38	12	ug/kg	
11097-69-1	Aroclor 1254	ND	38	17	ug/kg	
11096-82-5	Aroclor 1260	ND	38	16	ug/kg	
11100-14-4	Aroclor 1268	ND	38	12	ug/kg	
37324-23-5	Aroclor 1262	ND	38	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	103%		20-152%
877-09-8	Tetrachloro-m-xylene	135%		20-152%
2051-24-3	Decachlorobiphenyl	36%		12-157%
2051-24-3	Decachlorobiphenyl	387% [a]		12-157%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8260C SW846 1311 **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2V25435.D	5	08/24/15	HA	08/23/15	GP91434	V2V1021
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
71-43-2	Benzene	0.139	D018	0.50	0.0025	0.0012	mg/l	
78-93-3	2-Butanone (MEK)	ND	D035	200	0.10	0.028	mg/l	
56-23-5	Carbon tetrachloride	ND	D019	0.50	0.0050	0.0011	mg/l	
108-90-7	Chlorobenzene	ND	D021	100	0.0050	0.00093	mg/l	
67-66-3	Chloroform	ND	D022	6.0	0.0050	0.00094	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.0050	0.0014	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028	0.50	0.0050	0.00090	mg/l	
75-35-4	1,1-Dichloroethene	ND	D029	0.70	0.0050	0.0026	mg/l	
127-18-4	Tetrachloroethene	ND	D039	0.70	0.0050	0.0020	mg/l	
79-01-6	Trichloroethene	ND	D040	0.50	0.0050	0.0011	mg/l	
75-01-4	Vinyl chloride	ND	D043	0.20	0.0050	0.00074	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		76-120%
17060-07-0	1,2-Dichloroethane-D4	92%		64-135%
2037-26-5	Toluene-D8	97%		76-117%
460-00-4	4-Bromofluorobenzene	93%		72-122%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3510C **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P20743.D	1	08/26/15	SD	08/25/15	OP86663	E5P1067
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2		

ABN TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	D023	200	0.020	0.0082	mg/l	
	3&4-Methylphenol	0.0168	D024	200	0.020	0.0067	mg/l	J
87-86-5	Pentachlorophenol	ND	D037	100	0.10	0.014	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041	400	0.050	0.015	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042	2.0	0.050	0.014	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.020	0.0023	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030	0.13	0.020	0.0026	mg/l	
118-74-1	Hexachlorobenzene	ND	D032	0.13	0.020	0.0042	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033	0.50	0.010	0.0036	mg/l	
67-72-1	Hexachloroethane	ND	D034	3.0	0.050	0.0022	mg/l	
98-95-3	Nitrobenzene	ND	D036	2.0	0.020	0.0046	mg/l	
110-86-1	Pyridine	0.0047	D038	5.0	0.020	0.0027	mg/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		12-110%
4165-62-2	Phenol-d5	37%		10-110%
118-79-6	2,4,6-Tribromophenol	92%		42-154%
4165-60-0	Nitrobenzene-d5	89%		29-139%
321-60-8	2-Fluorobiphenyl	84%		33-129%
1718-51-0	Terphenyl-d14	99%		10-140%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8081B SW846 3510C **Percent Solids:** 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G26587.D	1	09/02/15	YD	08/25/15	OP86672	G6G780
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	10.0 ml
Run #2		

Pesticide TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
58-89-9	gamma-BHC (Lindane)	ND	D013	0.40	0.00010	0.000052	mg/l	
12789-03-6	Chlordane	ND	D020	0.030	0.0050	0.00092	mg/l	
72-20-8	Endrin	ND	D012	0.020	0.00010	0.000045	mg/l	
76-44-8	Heptachlor	ND	D031	0.0080	0.00010	0.000049	mg/l	
1024-57-3	Heptachlor epoxide	ND	D031	0.0080	0.00010	0.000082	mg/l	
72-43-5	Methoxychlor	ND	D014	10	0.00020	0.000072	mg/l	
8001-35-2	Toxaphene	ND	D015	0.50	0.0025	0.0015	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		30-137%
877-09-8	Tetrachloro-m-xylene	66%		30-137%
2051-24-3	Decachlorobiphenyl	91%		10-137%
2051-24-3	Decachlorobiphenyl	112%		10-137%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-1-081915
Lab Sample ID: JC1982-1A
Matrix: SO - Soil
Date Sampled: 08/19/15
Date Received: 08/20/15
Percent Solids: 77.4
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Barium	< 1.0	D005	100	1.0	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Cadmium	< 0.025	D006	1.0	0.025	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Chromium	< 0.050	D007	5.0	0.050	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Lead	< 0.50	D008	5.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Mercury	< 0.00020	D009	0.20	0.00020	mg/l	1	08/24/15	08/24/15	MA	SW846 7470A [1]	SW846 7470A [4]
Selenium	< 0.50	D010	1.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Silver	< 0.050	D011	5.0	0.050	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA37397
(2) Instrument QC Batch: MA37414
(3) Prep QC Batch: MP88566
(4) Prep QC Batch: MP88584

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	IDW-SO-1-081915		
Lab Sample ID:	JC1982-1A	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
		Percent Solids:	77.4
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Corrosivity as pH	7.60 NC		su	1	08/22/15 14:23	SA	SW846 CHAP7
Cyanide Reactivity	< 12	12	mg/kg	1	08/24/15 15:04	BM	SW846 CHAP7/9012 B
Ignitability (Flashpoint)	> 200		Deg. F	1	08/22/15	SA	SW846 CHAP7/ASTM D93
Sulfide Reactivity	< 120	120	mg/kg	1	08/24/15	MP	SW846 CHAP7/9034

RL = Reporting Limit

Report of Analysis

Client Sample ID:	IDW-SO-2-081915		
Lab Sample ID:	JC1982-2	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8260C	**Percent Solids:**	68.7
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E228676.D	1	08/28/15	TDN	n/a	n/a	VE10012
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	7.9 g	10.0 ml	2.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	57000	13000	ug/kg	
71-43-2	Benzene	26500	2900	760	ug/kg	
74-97-5	Bromochloromethane	ND	29000	1800	ug/kg	
75-27-4	Bromodichloromethane	ND	11000	900	ug/kg	
75-25-2	Bromoform	ND	29000	1400	ug/kg	
74-83-9	Bromomethane	ND	29000	2100	ug/kg	
78-93-3	2-Butanone (MEK)	ND	57000	11000	ug/kg	
75-15-0	Carbon disulfide	ND	11000	1300	ug/kg	
56-23-5	Carbon tetrachloride	ND	11000	1300	ug/kg	
108-90-7	Chlorobenzene	ND	11000	890	ug/kg	
75-00-3	Chloroethane	ND	29000	2800	ug/kg	
67-66-3	Chloroform	ND	11000	860	ug/kg	
74-87-3	Chloromethane	ND	29000	1500	ug/kg	
110-82-7	Cyclohexane	ND	11000	1800	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	11000	3100	ug/kg	
124-48-1	Dibromochloromethane	ND	11000	1200	ug/kg	
106-93-4	1,2-Dibromoethane	ND	5700	750	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	5700	700	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	5700	900	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	5700	1300	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	29000	2100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5700	810	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5700	770	ug/kg	
75-35-4	1,1-Dichloroethene	ND	5700	3400	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	5700	4500	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	5700	3400	ug/kg	
78-87-5	1,2-Dichloropropane	ND	11000	1400	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	11000	680	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	11000	1000	ug/kg	
100-41-4	Ethylbenzene	116000	5700	940	ug/kg	
76-13-1	Freon 113	ND	29000	2600	ug/kg	
591-78-6	2-Hexanone	ND	29000	7700	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8260C **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	10300	11000	610	ug/kg	J
79-20-9	Methyl Acetate	ND	29000	4900	ug/kg	
108-87-2	Methylcyclohexane	5170	11000	1300	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	5700	880	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	29000	2600	ug/kg	
75-09-2	Methylene chloride	ND	29000	5600	ug/kg	
100-42-5	Styrene	ND	11000	1000	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	11000	1000	ug/kg	
127-18-4	Tetrachloroethene	ND	11000	1700	ug/kg	
108-88-3	Toluene	24500	5700	1200	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	29000	1000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	29000	970	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	11000	860	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	11000	840	ug/kg	
79-01-6	Trichloroethene	ND	5700	840	ug/kg	
75-69-4	Trichlorofluoromethane	ND	29000	1400	ug/kg	
75-01-4	Vinyl chloride	ND	11000	1100	ug/kg	
	m,p-Xylene	185000	5700	2000	ug/kg	
95-47-6	o-Xylene	86800	5700	1600	ug/kg	
1330-20-7	Xylene (total)	272000	5700	1600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-122%
17060-07-0	1,2-Dichloroethane-D4	87%		68-124%
2037-26-5	Toluene-D8	101%		77-125%
460-00-4	4-Bromofluorobenzene	96%		72-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	C3 alkyl benzene	15.93	110000	ug/kg	J
95-63-6	Benzene, 1,2,4-trimethyl-	16.45	130000	ug/kg	JN
496-11-7	Indane	17.23	320000	ug/kg	JN
95-13-6	Indene	17.49	200000	ug/kg	JN
	1H-Indene-dihydro-methyl- isomer	17.83	42000	ug/kg	J
	1H-Indene-dihydro-methyl- isomer	18.48	63000	ug/kg	J
	1H-Indene-dihydro-methyl- isomer	18.69	66000	ug/kg	J
	1H-Indene, methyl-isomer	18.77	65000	ug/kg	J
	Methylindene-isomer	18.90	84000	ug/kg	J
91-20-3	Naphthalene	19.52	4800000	ug/kg	JN

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-SO-2-081915		
Lab Sample ID:	JC1982-2	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8260C	**Percent Solids:**	68.7
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

VOA TCL List

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
270-82-6	2-Benzothiophene	19.68	74000	ug/kg	JN
	Naphthalene, methyl- isomer	20.87	560000	ug/kg	J
	Naphthalene, methyl- isomer	21.15	270000	ug/kg	J
	Naphthalene, ethyl-	21.84	38000	ug/kg	J
	Naphthalene, dimethyl- isomer	22.35	46000	ug/kg	J
	Total TIC, Volatile		6868000	ug/kg	J
	Total Alkanes		0	ug/kg	

(a) Diluted due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P20828.D	1	08/28/15	AD	08/26/15	OP86719	E5P1070
Run #2	5P20855.D	10	08/28/15	AP	08/26/15	OP86719	E5P1071

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2	31.2 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	93	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	87	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	86	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	38	ug/kg	
95-48-7	2-Methylphenol	ND	93	61	ug/kg	
	3&4-Methylphenol	ND	93	52	ug/kg	
88-75-5	2-Nitrophenol	ND	230	42	ug/kg	
100-02-7	4-Nitrophenol	ND	470	140	ug/kg	
87-86-5	Pentachlorophenol	ND	230	110	ug/kg	
108-95-2	Phenol	ND	93	30	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	110	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	100	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	73	ug/kg	
83-32-9	Acenaphthene	13600 [a]	470	94	ug/kg	
208-96-8	Acenaphthylene	776	47	7.0	ug/kg	
98-86-2	Acetophenone	366	230	15	ug/kg	
120-12-7	Anthracene	11300 [a]	470	100	ug/kg	
1912-24-9	Atrazine	ND	93	28	ug/kg	
56-55-3	Benzo(a)anthracene	14800 [a]	470	90	ug/kg	
50-32-8	Benzo(a)pyrene	13200 [a]	470	110	ug/kg	
205-99-2	Benzo(b)fluoranthene	13900 [a]	470	92	ug/kg	
191-24-2	Benzo(g,h,i)perylene	7400 [a]	470	150	ug/kg	
207-08-9	Benzo(k)fluoranthene	5890 [a]	470	150	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	93	19	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	93	18	ug/kg	
92-52-4	1,1'-Biphenyl	1200	93	9.2	ug/kg	
100-52-7	Benzaldehyde	ND	230	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	93	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	15	ug/kg	
86-74-8	Carbazole	1740	93	10	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	93	29	ug/kg	
218-01-9	Chrysene	15000 [a]	470	110	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	93	31	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	93	11	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	93	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	93	9.8	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	47	15	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	47	9.9	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	93	25	ug/kg	
123-91-1	1,4-Dioxane	ND	47	31	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1720	47	11	ug/kg	
132-64-9	Dibenzofuran	7090 [a]	930	76	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	93	12	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	93	12	ug/kg	
84-66-2	Diethyl phthalate	ND	93	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	93	9.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	93	15	ug/kg	
206-44-0	Fluoranthene	37500 [a]	470	160	ug/kg	
86-73-7	Fluorene	12400 [a]	470	350	ug/kg	
118-74-1	Hexachlorobenzene	ND	93	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	47	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	470	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	8090 [a]	470	150	ug/kg	
78-59-1	Isophorone	ND	93	8.0	ug/kg	
91-57-6	2-Methylnaphthalene	2530	93	11	ug/kg	
88-74-4	2-Nitroaniline	ND	230	22	ug/kg	
99-09-2	3-Nitroaniline	ND	230	15	ug/kg	
100-01-6	4-Nitroaniline	ND	230	13	ug/kg	
91-20-3	Naphthalene	7840 [a]	470	69	ug/kg	
98-95-3	Nitrobenzene	ND	93	19	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	93	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	11	ug/kg	
85-01-8	Phenanthrene	40100 [a]	470	99	ug/kg	
129-00-0	Pyrene	28000 [a]	470	110	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	7.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%	82%	22-121%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%	78%	27-119%
118-79-6	2,4,6-Tribromophenol	93%	96%	17-158%
4165-60-0	Nitrobenzene-d5	64%	79%	33-127%
321-60-8	2-Fluorobiphenyl	65%	84%	41-121%
1718-51-0	Terphenyl-d14	64%	85%	44-137%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	unknown	4.85	1400	ug/kg	J
	unknown	7.12	1100	ug/kg	J
83-33-0	1H-Inden-1-one, 2,3-dihydro-	7.75	3100	ug/kg	JN
90-12-0	Naphthalene, 1-methyl-	8.01	2400	ug/kg	JN
	Naphthalene dimethyl	8.66	3500	ug/kg	J
	Naphthalene dimethyl	8.75	3800	ug/kg	J
	Naphthalene dimethyl	8.78	2000	ug/kg	J
	Naphthalene dimethyl	8.89	2700	ug/kg	J
	Naphthalene, trimethyl	9.29	1300	ug/kg	J
	unknown	9.35	930	ug/kg	J
	Naphthalene trimethyl	9.47	790	ug/kg	J
	Naphthalene trimethyl	9.56	910	ug/kg	J
	Naphthalene trimethyl	9.67	1300	ug/kg	J
4780-79-4	1-Naphthalenemethanol	9.76	1500	ug/kg	JN
	unknown	9.91	1700	ug/kg	J
	unknown	9.94	1000	ug/kg	J
	unknown	10.03	1500	ug/kg	J
	unknown	15.97	850	ug/kg	J
	Dibenzopyrene	16.15	920	ug/kg	J
	unknown PAH substance	16.60	2400	ug/kg	J
	unknown PAH substance	16.86	5100	ug/kg	J
	unknown PAH substance	18.61	1400	ug/kg	J
	unknown PAH substance	19.04	1500	ug/kg	J
	unknown PAH substance	19.11	940	ug/kg	J
	unknown PAH substance	19.64	1600	ug/kg	J
	Total TIC, Semi-Volatile		45640	ug/kg	J
	Total Alkanes		0	ug/kg	

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8081B SW846 3546 **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G114753.D	1	09/02/15	YD	08/24/15	OP86662	G1G3770
Run #2							

	Initial Weight	Final Volume
Run #1	15.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.93	0.83	ug/kg	
319-84-6	alpha-BHC	ND	0.93	0.62	ug/kg	
319-85-7	beta-BHC	ND	0.93	0.58	ug/kg	
319-86-8	delta-BHC	ND	0.93	0.37	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.93	0.42	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.93	0.50	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.93	0.71	ug/kg	
57-74-9	Chlordane (alpha and gamma)	ND	0.93	0.50	ug/kg	
60-57-1	Dieldrin	ND	0.93	0.73	ug/kg	
72-54-8	4,4'-DDD	ND	0.93	0.35	ug/kg	
72-55-9	4,4'-DDE	ND	0.93	0.31	ug/kg	
50-29-3	4,4'-DDT	ND	0.93	0.36	ug/kg	
72-20-8	Endrin	ND	0.93	0.33	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.93	0.53	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.93	0.69	ug/kg	
959-98-8	Endosulfan-I	ND	0.93	0.31	ug/kg	
33213-65-9	Endosulfan-II	ND	0.93	0.88	ug/kg	
76-44-8	Heptachlor	ND	0.93	0.77	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.93	0.39	ug/kg	
72-43-5	Methoxychlor	ND	1.9	0.52	ug/kg	
53494-70-5	Endrin ketone	ND	0.93	0.49	ug/kg	
8001-35-2	Toxaphene	ND	23	16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		24-136%
877-09-8	Tetrachloro-m-xylene	25%		24-136%
2051-24-3	Decachlorobiphenyl	19%		10-153%
2051-24-3	Decachlorobiphenyl	83%		10-153%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8082A SW846 3546 **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G119164.D	1	08/28/15	DG	08/24/15	OP86661	G2G3447
Run #2							

	Initial Weight	Final Volume
Run #1	15.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	47	15	ug/kg	
11104-28-2	Aroclor 1221	ND	47	27	ug/kg	
11141-16-5	Aroclor 1232	ND	47	15	ug/kg	
53469-21-9	Aroclor 1242	ND	47	21	ug/kg	
12672-29-6	Aroclor 1248	ND	47	14	ug/kg	
11097-69-1	Aroclor 1254	ND	47	21	ug/kg	
11096-82-5	Aroclor 1260	ND	47	20	ug/kg	
11100-14-4	Aroclor 1268	ND	47	14	ug/kg	
37324-23-5	Aroclor 1262	ND	47	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		20-152%
877-09-8	Tetrachloro-m-xylene	31%		20-152%
2051-24-3	Decachlorobiphenyl	22%		12-157%
2051-24-3	Decachlorobiphenyl	34%		12-157%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8260C SW846 1311 **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2V25436.D	5	08/24/15	HA	08/23/15	GP91434	V2V1021
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
71-43-2	Benzene	0.0482	D018	0.50	0.0025	0.0012	mg/l	
78-93-3	2-Butanone (MEK)	ND	D035	200	0.10	0.028	mg/l	
56-23-5	Carbon tetrachloride	ND	D019	0.50	0.0050	0.0011	mg/l	
108-90-7	Chlorobenzene	ND	D021	100	0.0050	0.00093	mg/l	
67-66-3	Chloroform	ND	D022	6.0	0.0050	0.00094	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.0050	0.0014	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028	0.50	0.0050	0.00090	mg/l	
75-35-4	1,1-Dichloroethene	ND	D029	0.70	0.0050	0.0026	mg/l	
127-18-4	Tetrachloroethene	ND	D039	0.70	0.0050	0.0020	mg/l	
79-01-6	Trichloroethene	ND	D040	0.50	0.0050	0.0011	mg/l	
75-01-4	Vinyl chloride	ND	D043	0.20	0.0050	0.00074	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		76-120%
17060-07-0	1,2-Dichloroethane-D4	96%		64-135%
2037-26-5	Toluene-D8	98%		76-117%
460-00-4	4-Bromofluorobenzene	93%		72-122%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3510C **Percent Solids:** 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P20744.D	1	08/26/15	SD	08/25/15	OP86663	E5P1067
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2		

ABN TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	D023	200	0.020	0.0082	mg/l	
	3&4-Methylphenol	ND	D024	200	0.020	0.0067	mg/l	
87-86-5	Pentachlorophenol	ND	D037	100	0.10	0.014	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041	400	0.050	0.015	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042	2.0	0.050	0.014	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.020	0.0023	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030	0.13	0.020	0.0026	mg/l	
118-74-1	Hexachlorobenzene	ND	D032	0.13	0.020	0.0042	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033	0.50	0.010	0.0036	mg/l	
67-72-1	Hexachloroethane	ND	D034	3.0	0.050	0.0022	mg/l	
98-95-3	Nitrobenzene	ND	D036	2.0	0.020	0.0046	mg/l	
110-86-1	Pyridine	ND	D038	5.0	0.020	0.0027	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		12-110%
4165-62-2	Phenol-d5	34%		10-110%
118-79-6	2,4,6-Tribromophenol	94%		42-154%
4165-60-0	Nitrobenzene-d5	90%		29-139%
321-60-8	2-Fluorobiphenyl	75%		33-129%
1718-51-0	Terphenyl-d14	99%		10-140%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2A
Matrix: SO - Soil
Method: SW846 8081B SW846 3510C
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

Date Sampled: 08/19/15
Date Received: 08/20/15
Percent Solids: 68.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G26588.D	1	09/02/15	YD	08/25/15	OP86672	G6G780
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	10.0 ml
Run #2		

Pesticide TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
58-89-9	gamma-BHC (Lindane)	ND	D013	0.40	0.00010	0.000052	mg/l	
12789-03-6	Chlordane	ND	D020	0.030	0.0050	0.00092	mg/l	
72-20-8	Endrin	ND	D012	0.020	0.00010	0.000045	mg/l	
76-44-8	Heptachlor	ND	D031	0.0080	0.00010	0.000049	mg/l	
1024-57-3	Heptachlor epoxide	ND	D031	0.0080	0.00010	0.000082	mg/l	
72-43-5	Methoxychlor	ND	D014	10	0.00020	0.000072	mg/l	
8001-35-2	Toxaphene	ND	D015	0.50	0.0025	0.0015	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	98%		30-137%
877-09-8	Tetrachloro-m-xylene	77%		30-137%
2051-24-3	Decachlorobiphenyl	55%		10-137%
2051-24-3	Decachlorobiphenyl	110%		10-137%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-2-081915
Lab Sample ID: JC1982-2A
Matrix: SO - Soil
Date Sampled: 08/19/15
Date Received: 08/20/15
Percent Solids: 68.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Barium	< 1.0	D005	100	1.0	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Cadmium	< 0.025	D006	1.0	0.025	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Chromium	< 0.050	D007	5.0	0.050	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Lead	< 0.50	D008	5.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Mercury	< 0.00020	D009	0.20	0.00020	mg/l	1	08/24/15	08/24/15	MA	SW846 7470A [1]	SW846 7470A [4]
Selenium	< 0.50	D010	1.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Silver	< 0.050	D011	5.0	0.050	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA37397
(2) Instrument QC Batch: MA37414
(3) Prep QC Batch: MP88566
(4) Prep QC Batch: MP88584

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	IDW-SO-2-081915		
Lab Sample ID:	JC1982-2A	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
		Percent Solids:	68.7
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Corrosivity as pH	7.62 NC		su	1	08/22/15 14:23	SA	SW846 CHAP7
Cyanide Reactivity	< 14	14	mg/kg	1	08/24/15 15:07	BM	SW846 CHAP7/9012 B
Ignitability (Flashpoint)	> 200		Deg. F	1	08/22/15	SA	SW846 CHAP7/ASTM D93
Sulfide Reactivity	< 140	140	mg/kg	1	08/24/15	MP	SW846 CHAP7/9034

RL = Reporting Limit

Report of Analysis

Client Sample ID:	IDW-SO-3-081915		
Lab Sample ID:	JC1982-3	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8260C	**Percent Solids:**	89.7
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X157474.D	1	09/02/15	PR	n/a	n/a	VX6773
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	2.4	ug/kg	
71-43-2	Benzene	ND	0.53	0.14	ug/kg	
74-97-5	Bromochloromethane	ND	5.3	0.32	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.16	ug/kg	
75-25-2	Bromoform	ND	5.3	0.25	ug/kg	
74-83-9	Bromomethane	ND	5.3	0.38	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.0	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.24	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.24	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.3	0.51	ug/kg	
67-66-3	Chloroform	ND	2.1	0.16	ug/kg	
74-87-3	Chloromethane	ND	5.3	0.28	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.33	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.57	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.22	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.14	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.17	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.24	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.3	0.38	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.15	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.14	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.62	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.82	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.62	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.25	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.19	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.17	ug/kg	
76-13-1	Freon 113	ND	5.3	0.47	ug/kg	
591-78-6	2-Hexanone	ND	5.3	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8260C **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.11	ug/kg	
79-20-9	Methyl Acetate	ND	5.3	0.90	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.24	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.16	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.3	0.48	ug/kg	
75-09-2	Methylene chloride	ND	5.3	1.0	ug/kg	
100-42-5	Styrene	ND	2.1	0.19	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.18	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.32	ug/kg	
108-88-3	Toluene	ND	1.1	0.22	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.3	0.19	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.3	0.18	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.16	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.15	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.15	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.3	0.26	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.21	ug/kg	
	m,p-Xylene	ND	1.1	0.37	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.29	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.29	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		70-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%
2037-26-5	Toluene-D8	99%		77-125%
460-00-4	4-Bromofluorobenzene	103%		72-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	
	Total Alkanes		0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3P46380.D	2	08/31/15	AD	08/28/15	OP86778	E3P2077
Run #2	3P46452.D	20	09/02/15	OYA	08/28/15	OP86778	E3P2081
Run #3	3P46453.D	200	09/02/15	OYA	08/28/15	OP86778	E3P2081

	Initial Weight	Final Volume
Run #1	32.3 g	1.0 ml
Run #2	32.3 g	1.0 ml
Run #3	32.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	140	63	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	350	130	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	350	130	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	350	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	350	290	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	56	ug/kg	
95-48-7	2-Methylphenol	ND	140	90	ug/kg	
	3&4-Methylphenol	157	140	77	ug/kg	
88-75-5	2-Nitrophenol	ND	350	63	ug/kg	
100-02-7	4-Nitrophenol	ND	690	210	ug/kg	
87-86-5	Pentachlorophenol	ND	350	170	ug/kg	
108-95-2	Phenol	99.7	140	45	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	350	160	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	350	150	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	350	110	ug/kg	
83-32-9	Acenaphthene	17800 [b]	690	140	ug/kg	
208-96-8	Acenaphthylene	1190	69	10	ug/kg	
98-86-2	Acetophenone	ND	350	22	ug/kg	
120-12-7	Anthracene	21400 [b]	690	150	ug/kg	
1912-24-9	Atrazine	ND	140	41	ug/kg	
56-55-3	Benzo(a)anthracene	57900 [b]	690	130	ug/kg	
50-32-8	Benzo(a)pyrene	62200 [b]	690	170	ug/kg	
205-99-2	Benzo(b)fluoranthene	68000 [b]	690	140	ug/kg	
191-24-2	Benzo(g,h,i)perylene	33900 [b]	690	230	ug/kg	
207-08-9	Benzo(k)fluoranthene	24900 [b]	690	220	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	140	28	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	140	27	ug/kg	
92-52-4	1,1'-Biphenyl	554	140	14	ug/kg	
100-52-7	Benzaldehyde	ND	350	16	ug/kg	
91-58-7	2-Chloronaphthalene	ND	140	16	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	350	22	ug/kg	
86-74-8	Carbazole	9290 b	1400	150	ug/kg	
105-60-2	Caprolactam	ND	140	43	ug/kg	
218-01-9	Chrysene	57900 b	690	170	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	140	46	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	140	16	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	140	24	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	140	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	69	23	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	69	15	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	140	37	ug/kg	
123-91-1	1,4-Dioxane	ND	69	46	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	10200 b	690	170	ug/kg	
132-64-9	Dibenzofuran	4700	140	11	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	140	18	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	140	17	ug/kg	
84-66-2	Diethyl phthalate	ND	140	17	ug/kg	
131-11-3	Dimethyl phthalate	ND	140	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	140	22	ug/kg	
206-44-0	Fluoranthene	92400 c	6900	2400	ug/kg	
86-73-7	Fluorene	9540 b	690	520	ug/kg	
118-74-1	Hexachlorobenzene	ND	140	18	ug/kg	
87-68-3	Hexachlorobutadiene	ND	69	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	690	26	ug/kg	
67-72-1	Hexachloroethane	ND	350	35	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	39400 b	690	220	ug/kg	
78-59-1	Isophorone	ND	140	12	ug/kg	
91-57-6	2-Methylnaphthalene	2470	140	16	ug/kg	
88-74-4	2-Nitroaniline	ND	350	32	ug/kg	
99-09-2	3-Nitroaniline	ND	350	23	ug/kg	
100-01-6	4-Nitroaniline	ND	350	19	ug/kg	
91-20-3	Naphthalene	5860	69	10	ug/kg	
98-95-3	Nitrobenzene	ND	140	28	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	140	19	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	350	17	ug/kg	
85-01-8	Phenanthrene	64300 c	6900	1500	ug/kg	
129-00-0	Pyrene	75200 c	6900	1600	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	350	12	ug/kg	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3550C **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	62%	38%	0% [d]	22-121%
4165-62-2	Phenol-d5	65%	41%	0% [d]	27-119%
118-79-6	2,4,6-Tribromophenol	54%	36%	0% [d]	17-158%
4165-60-0	Nitrobenzene-d5	81%	54%	0% [d]	33-127%
321-60-8	2-Fluorobiphenyl	64%	64%	0% [d]	41-121%
1718-51-0	Terphenyl-d14	50%	60%	0% [d]	44-137%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
90-12-0	Naphthalene, 1-methyl-	6.39	570	ug/kg	JN
	unknown	7.94	2500	ug/kg	J
	unknown	7.97	1700	ug/kg	J
	unknown	8.06	1600	ug/kg	J
	Phenanthrene methyl	10.13	400	ug/kg	J
	unknown	10.28	650	ug/kg	J
	Pyrene methyl	12.65	1000	ug/kg	J
	Pyrene methyl	12.80	680	ug/kg	J
	Pyrene methyl	12.86	370	ug/kg	J
	unknown	13.99	370	ug/kg	J
	unknown	14.08	570	ug/kg	J
	unknown	14.83	500	ug/kg	J
	unknown	15.06	450	ug/kg	J
	unknown	15.15	300	ug/kg	J
	Chrysene methyl	15.51	610	ug/kg	J
	unknown	15.69	350	ug/kg	J
	unknown	15.80	350	ug/kg	J
	unknown PAH substance	17.14	660	ug/kg	J
	unknown PAH substance	17.50	1600	ug/kg	J
	unknown PAH substance	17.75	600	ug/kg	J
	unknown	18.04	630	ug/kg	J
	unknown	18.53	340	ug/kg	J
	unknown PAH substance	19.47	520	ug/kg	J
	unknown PAH substance	19.86	440	ug/kg	J
	unknown PAH substance	19.91	520	ug/kg	J
	Total TIC, Semi-Volatile		18280	ug/kg	J
	Total Alkanes		0	ug/kg	

(a) Dilution required due to viscosity of the extract matrix
(b) Result is from Run# 2
(c) Result is from Run# 3

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-SO-3-081915		
Lab Sample ID:	JC1982-3	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	89.7
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q

(d) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-SO-3-081915		
Lab Sample ID:	JC1982-3	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
Method:	SW846 8081B SW846 3546	**Percent Solids:**	89.7
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G114754.D	1	09/02/15	YD	08/24/15	OP86662	G1G3770
Run #2							

	Initial Weight	Final Volume
Run #1	17.0 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.66	0.58	ug/kg	
319-84-6	alpha-BHC	ND	0.66	0.44	ug/kg	
319-85-7	beta-BHC	ND	0.66	0.40	ug/kg	
319-86-8	delta-BHC	ND	0.66	0.26	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.66	0.30	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.66	0.35	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.66	0.50	ug/kg	
57-74-9	Chlordane (alpha and gamma)	ND	0.66	0.35	ug/kg	
60-57-1	Dieldrin	ND	0.66	0.51	ug/kg	
72-54-8	4,4'-DDD	ND	0.66	0.24	ug/kg	
72-55-9	4,4'-DDE	ND	0.66	0.22	ug/kg	
50-29-3	4,4'-DDT [a]	17.4	0.66	0.25	ug/kg	
72-20-8	Endrin	ND	0.66	0.23	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.66	0.37	ug/kg	
7421-93-4	Endrin aldehyde [a]	26.0	0.66	0.49	ug/kg	
959-98-8	Endosulfan-I	ND	0.66	0.22	ug/kg	
33213-65-9	Endosulfan-II	ND	0.66	0.62	ug/kg	
76-44-8	Heptachlor	ND	0.66	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.66	0.27	ug/kg	
72-43-5	Methoxychlor	ND	1.3	0.36	ug/kg	
53494-70-5	Endrin ketone	ND	0.66	0.34	ug/kg	
8001-35-2	Toxaphene	ND	16	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	42%		24-136%
877-09-8	Tetrachloro-m-xylene	46%		24-136%
2051-24-3	Decachlorobiphenyl	95%		10-153%
2051-24-3	Decachlorobiphenyl	1532% [b]		10-153%

(a) More than 40 % RPD for detected concentrations between the two GC columns.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3 **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8082A SW846 3546 **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G119165.D	1	08/28/15	DG	08/24/15	OP86661	G2G3447
Run #2							

	Initial Weight	Final Volume
Run #1	17.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	33	10	ug/kg	
11104-28-2	Aroclor 1221	ND	33	19	ug/kg	
11141-16-5	Aroclor 1232	ND	33	11	ug/kg	
53469-21-9	Aroclor 1242	ND	33	15	ug/kg	
12672-29-6	Aroclor 1248	ND	33	10	ug/kg	
11097-69-1	Aroclor 1254	ND	33	15	ug/kg	
11096-82-5	Aroclor 1260	ND	33	14	ug/kg	
11100-14-4	Aroclor 1268	ND	33	10	ug/kg	
37324-23-5	Aroclor 1262	ND	33	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	58%		20-152%
877-09-8	Tetrachloro-m-xylene	50%		20-152%
2051-24-3	Decachlorobiphenyl	1188% [a]		12-157%
2051-24-3	Decachlorobiphenyl	759% [a]		12-157%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8260C SW846 1311 **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2V25462.D	5	08/25/15	HA	08/23/15	GP91434	V2V1022
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
71-43-2	Benzene	ND	D018	0.50	0.0025	0.0012	mg/l	
78-93-3	2-Butanone (MEK)	ND	D035	200	0.10	0.028	mg/l	
56-23-5	Carbon tetrachloride	ND	D019	0.50	0.0050	0.0011	mg/l	
108-90-7	Chlorobenzene	ND	D021	100	0.0050	0.00093	mg/l	
67-66-3	Chloroform	ND	D022	6.0	0.0050	0.00094	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.0050	0.0014	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028	0.50	0.0050	0.00090	mg/l	
75-35-4	1,1-Dichloroethene	ND	D029	0.70	0.0050	0.0026	mg/l	
127-18-4	Tetrachloroethene	ND	D039	0.70	0.0050	0.0020	mg/l	
79-01-6	Trichloroethene	ND	D040	0.50	0.0050	0.0011	mg/l	
75-01-4	Vinyl chloride	ND	D043	0.20	0.0050	0.00074	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		76-120%
17060-07-0	1,2-Dichloroethane-D4	92%		64-135%
2037-26-5	Toluene-D8	101%		76-117%
460-00-4	4-Bromofluorobenzene	101%		72-122%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8270D SW846 3510C **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P20745.D	1	08/26/15	SD	08/25/15	OP86663	E5P1067
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2		

ABN TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	D023	200	0.020	0.0082	mg/l	
	3&4-Methylphenol	ND	D024	200	0.020	0.0067	mg/l	
87-86-5	Pentachlorophenol	ND	D037	100	0.10	0.014	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041	400	0.050	0.015	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042	2.0	0.050	0.014	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.020	0.0023	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030	0.13	0.020	0.0026	mg/l	
118-74-1	Hexachlorobenzene	0.0064	D032	0.13	0.020	0.0042	mg/l	J
87-68-3	Hexachlorobutadiene	ND	D033	0.50	0.010	0.0036	mg/l	
67-72-1	Hexachloroethane	ND	D034	3.0	0.050	0.0022	mg/l	
98-95-3	Nitrobenzene	ND	D036	2.0	0.020	0.0046	mg/l	
110-86-1	Pyridine	ND	D038	5.0	0.020	0.0027	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		12-110%
4165-62-2	Phenol-d5	35%		10-110%
118-79-6	2,4,6-Tribromophenol	91%		42-154%
4165-60-0	Nitrobenzene-d5	88%		29-139%
321-60-8	2-Fluorobiphenyl	74%		33-129%
1718-51-0	Terphenyl-d14	96%		10-140%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3A **Date Sampled:** 08/19/15
Matrix: SO - Soil **Date Received:** 08/20/15
Method: SW846 8081B SW846 3510C **Percent Solids:** 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G26589.D	1	09/02/15	YD	08/25/15	OP86672	G6G780
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	10.0 ml
Run #2		

Pesticide TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
58-89-9	gamma-BHC (Lindane)	ND	D013	0.40	0.00010	0.000052	mg/l	
12789-03-6	Chlordane	ND	D020	0.030	0.0050	0.00092	mg/l	
72-20-8	Endrin	ND	D012	0.020	0.00010	0.000045	mg/l	
76-44-8	Heptachlor	ND	D031	0.0080	0.00010	0.000049	mg/l	
1024-57-3	Heptachlor epoxide	ND	D031	0.0080	0.00010	0.000082	mg/l	
72-43-5	Methoxychlor	ND	D014	10	0.00020	0.000072	mg/l	
8001-35-2	Toxaphene	ND	D015	0.50	0.0025	0.0015	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		30-137%
877-09-8	Tetrachloro-m-xylene	78%		30-137%
2051-24-3	Decachlorobiphenyl	72%		10-137%
2051-24-3	Decachlorobiphenyl	144% [a]		10-137%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-SO-3-081915
Lab Sample ID: JC1982-3A
Matrix: SO - Soil
Date Sampled: 08/19/15
Date Received: 08/20/15
Percent Solids: 89.7
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Barium	< 1.0	D005	100	1.0	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Cadmium	< 0.025	D006	1.0	0.025	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Chromium	< 0.050	D007	5.0	0.050	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Lead	< 0.50	D008	5.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Mercury	< 0.00020	D009	0.20	0.00020	mg/l	1	08/24/15	08/24/15	MA	SW846 7470A [1]	SW846 7470A [4]
Selenium	< 0.50	D010	1.0	0.50	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]
Silver	< 0.050	D011	5.0	0.050	mg/l	5	08/24/15	08/27/15	MS	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA37397
(2) Instrument QC Batch: MA37414
(3) Prep QC Batch: MP88566
(4) Prep QC Batch: MP88584

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	IDW-SO-3-081915		
Lab Sample ID:	JC1982-3A	**Date Sampled:**	08/19/15
Matrix:	SO - Soil	**Date Received:**	08/20/15
		Percent Solids:	89.7
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Corrosivity as pH	7.11 NC		su	1	08/22/15 14:23	SA	SW846 CHAP7
Cyanide Reactivity	< 10	10	mg/kg	1	08/24/15 15:08	BM	SW846 CHAP7/9012 B
Ignitability (Flashpoint)	> 200		Deg. F	1	08/22/15	SA	SW846 CHAP7/ASTM D93
Sulfide Reactivity	< 100	100	mg/kg	1	08/24/15	MP	SW846 CHAP7/9034

RL = Reporting Limit

Report of Analysis

Client Sample ID:	IDW-AQ-081915		
Lab Sample ID:	JC1982-4	**Date Sampled:**	08/19/15
Matrix:	AQ - Water	**Date Received:**	08/20/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A144272.D	2	08/27/15	TK	n/a	n/a	V3A6236
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	88.6	20	6.6	ug/l	
71-43-2	Benzene	195	1.0	0.47	ug/l	
74-97-5	Bromochloromethane	ND	2.0	0.74	ug/l	
75-27-4	Bromodichloromethane	0.94	2.0	0.45	ug/l	J
75-25-2	Bromoform	ND	2.0	0.47	ug/l	
74-83-9	Bromomethane	ND	4.0	0.85	ug/l	
78-93-3	2-Butanone (MEK)	14.4	20	11	ug/l	J
75-15-0	Carbon disulfide	0.68	4.0	0.51	ug/l	J
56-23-5	Carbon tetrachloride	ND	2.0	0.44	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.37	ug/l	
75-00-3	Chloroethane	ND	2.0	0.68	ug/l	
67-66-3	Chloroform	1.9	2.0	0.37	ug/l	J
74-87-3	Chloromethane	ND	2.0	0.81	ug/l	
110-82-7	Cyclohexane	ND	10	0.56	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.0	2.0	ug/l	
124-48-1	Dibromochloromethane	0.39	2.0	0.31	ug/l	J
106-93-4	1,2-Dibromoethane	ND	2.0	0.46	ug/l	
95-50-1	1,2-Dichlorobenzene	2.2	2.0	0.37	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.55	ug/l	
75-71-8	Dichlorodifluoromethane	ND	4.0	1.8	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.36	ug/l	
75-35-4	1,1-Dichloroethene	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.55	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	1.3	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.79	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.37	ug/l	
100-41-4	Ethylbenzene	144	2.0	0.54	ug/l	
76-13-1	Freon 113	ND	10	1.0	ug/l	
591-78-6	2-Hexanone	ND	10	3.5	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-AQ-081915
Lab Sample ID: JC1982-4 **Date Sampled:** 08/19/15
Matrix: AQ - Water **Date Received:** 08/20/15
Method: SW846 8260C **Percent Solids:** n/a
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	11.3	2.0	0.47	ug/l	
79-20-9	Methyl Acetate	ND	10	3.8	ug/l	
108-87-2	Methylcyclohexane	1.7	10	0.44	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.47	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	7.6	10	2.0	ug/l	J
75-09-2	Methylene chloride	ND	4.0	1.5	ug/l	
100-42-5	Styrene	86.4	2.0	0.54	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.41	ug/l	
127-18-4	Tetrachloroethene	ND	2.0	0.80	ug/l	
108-88-3	Toluene	218	2.0	0.32	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	2.0	0.45	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.42	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.43	ug/l	
79-01-6	Trichloroethene	ND	2.0	0.45	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	0.86	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.29	ug/l	
	m,p-Xylene	326	2.0	0.75	ug/l	
95-47-6	o-Xylene	208	2.0	0.33	ug/l	
1330-20-7	Xylene (total)	534	2.0	0.33	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	81%		76-120%
17060-07-0	1,2-Dichloroethane-D4	93%		73-122%
2037-26-5	Toluene-D8	111%		84-119%
460-00-4	4-Bromofluorobenzene	95%		78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	C3 alkyl benzene	16.64	41	ug/l	J
95-63-6	Benzene, 1,2,4-trimethyl-	17.14	82	ug/l	JN
271-89-6	Benzofuran	17.53	95	ug/l	JN
496-11-7	Indane	17.90	590	ug/l	JN
95-13-6	Indene	18.16	270	ug/l	JN
	Benzofuran, methyl- isomer	18.76	49	ug/l	J
	Benzofuran, methyl- isomer	18.88	100	ug/l	J
	1H-Indene-dihydro-methyl- isomer	19.14	37	ug/l	J
	1H-Indene-dihydro-methyl- isomer	19.34	35	ug/l	J
	1H-Indene-methyl- isomer	19.42	68	ug/l	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-AQ-081915		
Lab Sample ID:	JC1982-4	**Date Sampled:**	08/19/15
Matrix:	AQ - Water	**Date Received:**	08/20/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

VOA TCL List

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	1H-Indene-methyl- isomer	19.55	110	ug/l	J
91-20-3	Naphthalene	20.15	2700	ug/l	JN
	Benzothiophene	20.30	180	ug/l	J
	Naphthalene, methyl- isomer	21.48	270	ug/l	J
	Naphthalene, methyl- isomer	21.76	130	ug/l	J
	Total TIC, Volatile		4757	ug/l	J
	Total Alkanes		0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-AQ-081915
Lab Sample ID: JC1982-4 **Date Sampled:** 08/19/15
Matrix: AQ - Water **Date Received:** 08/20/15
Method: SW846 8270D SW846 3510C **Percent Solids:** n/a
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P18979.D	1	08/27/15	AD	08/26/15	OP86664	E6P856
Run #2	6P19006.D	40	08/27/15	BP	08/26/15	OP86664	E6P857
Run #3 [a]	6P19030.D	1	08/28/15	SW	08/27/15	OP86765	E6P858

	Initial Volume	Final Volume
Run #1	800 ml	1.0 ml
Run #2	800 ml	1.0 ml
Run #3	850 ml	1.0 ml

ABN TCL List without all PAH

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	6.3	1.6	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	6.3	1.6	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.5	2.0	ug/l	
105-67-9	2,4-Dimethylphenol	85.0	6.3	2.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	13	8.1	ug/l	
95-48-7	2-Methylphenol	4.4	2.5	1.6	ug/l	
	3&4-Methylphenol	ND	2.5	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	6.3	2.3	ug/l	
100-02-7	4-Nitrophenol	ND	13	1.1	ug/l	
108-95-2	Phenol	ND	2.5	0.68	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	6.3	1.8	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	6.3	2.1	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	6.3	1.9	ug/l	
83-32-9	Acenaphthene	254 [b]	50	15	ug/l	
208-96-8	Acenaphthylene	21.2	1.3	0.25	ug/l	
98-86-2	Acetophenone	ND	2.5	0.46	ug/l	
120-12-7	Anthracene	29.4	1.3	0.24	ug/l	
1912-24-9	Atrazine	ND	2.5	0.53	ug/l	
100-52-7	Benzaldehyde	ND	6.3	0.84	ug/l	
191-24-2	Benzo(g,h,i)perylene	1.2	1.3	0.39	ug/l	J
101-55-3	4-Bromophenyl phenyl ether	ND	2.5	0.31	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.5	0.28	ug/l	
92-52-4	1,1'-Biphenyl	70.4	1.3	0.34	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.5	0.43	ug/l	
106-47-8	4-Chloroaniline	ND	6.3	0.38	ug/l	
86-74-8	Carbazole	199 [b]	50	8.4	ug/l	
105-60-2	Caprolactam	ND	2.5	0.51	ug/l	
218-01-9	Chrysene	3.6	1.3	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.5	0.52	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.5	0.54	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-AQ-081915
Lab Sample ID: JC1982-4 **Date Sampled:** 08/19/15
Matrix: AQ - Water **Date Received:** 08/20/15
Method: SW846 8270D SW846 3510C **Percent Solids:** n/a
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List without all PAH

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.5	0.51	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.5	0.48	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.3	0.40	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.3	0.32	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.5	0.70	ug/l	
123-91-1	1,4-Dioxane	1.6	1.3	0.89	ug/l	
132-64-9	Dibenzofuran	185 [b]	250	11	ug/l	J
84-74-2	Di-n-butyl phthalate	ND	2.5	0.73	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.5	0.31	ug/l	
84-66-2	Diethyl phthalate	ND	2.5	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.5	0.33	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.5	0.69	ug/l	
206-44-0	Fluoranthene	29.0	1.3	0.20	ug/l	
86-73-7	Fluorene	160 [b]	50	14	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.3	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	13	0.60	ug/l	
67-72-1	Hexachloroethane	ND	2.5	0.36	ug/l	
78-59-1	Isophorone	ND	2.5	0.42	ug/l	
91-57-6	2-Methylnaphthalene	742 [b]	50	15	ug/l	
88-74-4	2-Nitroaniline	ND	6.3	0.40	ug/l	
99-09-2	3-Nitroaniline	ND	6.3	0.33	ug/l	
100-01-6	4-Nitroaniline	ND	6.3	0.38	ug/l	
91-20-3	Naphthalene	4030 [b]	50	13	ug/l	
98-95-3	Nitrobenzene	ND	2.5	0.65	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.5	0.47	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	6.3	0.26	ug/l	
85-01-8	Phenanthrene	220 [b]	50	9.3	ug/l	
129-00-0	Pyrene	17.0	1.3	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.5	0.56	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	2% [c]	0% [d]	2% [d]	14-88%
4165-62-2	Phenol-d5	0% [c]	0% [d]	1% [d]	10-110%
118-79-6	2,4,6-Tribromophenol	0% [c]	0% [d]	0% [d]	39-149%
4165-60-0	Nitrobenzene-d5	121%	90%	139% [d]	32-128%
321-60-8	2-Fluorobiphenyl	83%	100%	96%	35-119%
1718-51-0	Terphenyl-d14	76%	91%	96%	10-126%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-AQ-081915
Lab Sample ID: JC1982-4 **Date Sampled:** 08/19/15
Matrix: AQ - Water **Date Received:** 08/20/15
Method: SW846 8270D SW846 3510C **Percent Solids:** n/a
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

ABN TCL List without all PAH

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Pyridine, -methyl-	2.93	34	ug/l	J
	system artifact/aldol-condensation	3.16	42	ug/l	J
	Pyridine, -dimethyl-	3.86	110	ug/l	J
	C3 alkyl benzene	4.10	31	ug/l	J
62-53-3	Aniline	4.21	28	ug/l	JN
	Pyridine, -trimethyl-	4.28	85	ug/l	J
	C3 alkyl benzene	4.32	75	ug/l	J
	unknown	4.35	110	ug/l	J
	unknown	4.38	31	ug/l	J
	unknown	4.51	32	ug/l	J
496-11-7	Indane	4.59	310	ug/l	JN
	Benzonitrile, -methyl-	4.76	56	ug/l	J
	unknown	4.95	25	ug/l	J
	Naphthalene dimethyl	7.00	36	ug/l	J
	Naphthalene dimethyl	7.08	69	ug/l	J
	Naphthalene dimethyl	7.12	30	ug/l	J
	Quinoline, -dimethyl-	7.23	59	ug/l	J
90-43-7	o-Hydroxybiphenyl	7.74	34	ug/l	JN
	unknown	8.11	31	ug/l	J
	unknown	9.86	47	ug/l	J
	unknown	10.21	53	ug/l	J
	unknown	10.82	30	ug/l	J
	unknown	12.04	28	ug/l	J
	unknown	12.51	74	ug/l	J
	Total TIC, Semi-Volatile		1418	ug/l	J
	Total Alkanes		0	ug/l	

(a) Confirmation run for surrogate recoveries.
(b) Result is from Run# 2
(c) Outside control limits due to matrix interference. Confirmed by re-extraction.
(d) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-AQ-081915
Lab Sample ID: JC1982-4 **Date Sampled:** 08/19/15
Matrix: AQ - Water **Date Received:** 08/20/15
Method: SW846 8270D BY SIM SW846 3510C **Percent Solids:** n/a
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M57207.D	1	08/27/15	LK	08/26/15	OP86664A	E3M2646
Run #2 [a]	3M57340.D	1	09/01/15	AD	08/27/15	OP86765A	E3M2653

	Initial Volume	Final Volume
Run #1	800 ml	1.0 ml
Run #2	850 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
534-52-1	4,6-Dinitro-o-cresol	ND	0.63	0.11	ug/l	
87-86-5	Pentachlorophenol	ND	0.31	0.14	ug/l	
56-55-3	Benzo(a)anthracene	1.09	0.063	0.023	ug/l	
50-32-8	Benzo(a)pyrene	2.53	0.063	0.037	ug/l	
205-99-2	Benzo(b)fluoranthene	3.64	0.13	0.026	ug/l	
207-08-9	Benzo(k)fluoranthene	0.809	0.13	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.394	0.13	0.044	ug/l	
118-74-1	Hexachlorobenzene	ND	0.019	0.018	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	1.14	0.13	0.039	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	0% [c]	1% [b]	10-110%
4165-62-2	Phenol-d5	0% [c]	1% [b]	10-110%
118-79-6	2,4,6-Tribromophenol	0% [c]	0% [b]	10-157%
4165-60-0	Nitrobenzene-d5	44%	57%	23-131%
321-60-8	2-Fluorobiphenyl	67%	78%	24-120%
1718-51-0	Terphenyl-d14	17%	32%	10-125%

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to matrix interference.
(c) Outside control limits due to matrix interference. Confirmed by re-extraction.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-AQ-081915
Lab Sample ID: JC1982-4 **Date Sampled:** 08/19/15
Matrix: AQ - Water **Date Received:** 08/20/15
Method: SW846 8081B SW846 3510C **Percent Solids:** n/a
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4G59940.D	1	09/03/15	YD	08/25/15	OP86699	G4G1565
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0074	0.0031	ug/l	
319-84-6	alpha-BHC	ND	0.0074	0.0048	ug/l	
319-85-7	beta-BHC	ND	0.0074	0.0064	ug/l	
319-86-8	delta-BHC	ND	0.0074	0.0048	ug/l	
58-89-9	gamma-BHC (Lindane) [b]	0.042	0.0074	0.0039	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0074	0.0045	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0074	0.0037	ug/l	
57-74-9	Chlordane (alpha and gamma)	ND	0.0074	0.0037	ug/l	
60-57-1	Dieldrin	ND	0.0074	0.0037	ug/l	
72-54-8	4,4'-DDD	ND	0.0074	0.0048	ug/l	
72-55-9	4,4'-DDE	ND	0.0074	0.0045	ug/l	
50-29-3	4,4'-DDT	ND	0.0074	0.0038	ug/l	
72-20-8	Endrin	ND	0.0074	0.0033	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0074	0.0054	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0074	0.0054	ug/l	
53494-70-5	Endrin ketone	0.024	0.0074	0.0035	ug/l	
959-98-8	Endosulfan-I	ND	0.0074	0.0047	ug/l	
33213-65-9	Endosulfan-II	ND	0.0074	0.0049	ug/l	
76-44-8	Heptachlor	ND	0.0074	0.0036	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0074	0.0060	ug/l	
72-43-5	Methoxychlor	ND	0.015	0.0053	ug/l	
8001-35-2	Toxaphene	ND	0.19	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	53%		26-132%
877-09-8	Tetrachloro-m-xylene	88%		26-132%
2051-24-3	Decachlorobiphenyl	58%		10-118%
2051-24-3	Decachlorobiphenyl	119% [c]		10-118%

(a) There is no additional sample for re-extraction.
(b) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-AQ-081915		
Lab Sample ID:	JC1982-4	**Date Sampled:**	08/19/15
Matrix:	AQ - Water	**Date Received:**	08/20/15
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q

(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-AQ-081915		
Lab Sample ID:	JC1982-4	**Date Sampled:**	08/19/15
Matrix:	AQ - Water	**Date Received:**	08/20/15
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX176224.D	1	08/26/15	RK	08/25/15	OP86698	GXX5440
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.21	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.14	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.17	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.044	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.081	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		10-161%
877-09-8	Tetrachloro-m-xylene	86%		10-161%
2051-24-3	Decachlorobiphenyl	84%		10-137%
2051-24-3	Decachlorobiphenyl	71%		10-137%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-AQ-081915
Lab Sample ID: JC1982-4
Matrix: AQ - Water
Project: CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ

Date Sampled: 08/19/15
Date Received: 08/20/15
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum [a]	< 1000	1000	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Antimony [a]	< 30	30	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Arsenic [a]	< 15	15	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Barium	246	200	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Calcium	922000	25000	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Chromium	205	10	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Copper	33.6	10	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Iron	1240	100	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Lead [a]	24.4	15	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Magnesium	< 5000	5000	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Manganese	16.1	15	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	08/26/15	08/26/15	VM	SW846 7470A [2]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Potassium	642000	50000	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Selenium	18.8	10	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Sodium	814000	50000	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Thallium [a]	< 10	10	ug/l	5	08/24/15	08/26/15	ND	SW846 6010C [3]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	08/24/15	08/25/15	BS	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA37406
(2) Instrument QC Batch: MA37413
(3) Instrument QC Batch: MA37421
(4) Prep QC Batch: MP88557
(5) Prep QC Batch: MP88620

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	IDW-AQ-081915		
Lab Sample ID:	JC1982-4	**Date Sampled:**	08/19/15
Matrix:	AQ - Water	**Date Received:**	08/20/15
		Percent Solids:	n/a
Project:	CHMHLMAB: Quanta Resources Corporation Superfund Site, Edgewater, NJ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Corrosivity as pH	12.45 NC		su	1	08/22/15 13:03	SA	SW846 CHAP7
Cyanide Reactivity	< 10	10	mg/l	1	08/24/15 15:25	BM	SW846 CHAP7/9012B
Ignitability (Flashpoint)	> 200		Deg. F	1	08/22/15	SA	SW846 1010A/ASTM D93
Sulfide Reactivity	< 100	100	mg/l	1	08/24/15	MP	SW846 CHAP7/9034

RL = Reporting Limit

New Jersey ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST LABORATORIES

SLL
MW

CHAIN OF CUSTODY

PAGE 1 OF 1

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking # | Bottle Order Control #

Accutest Quote # | Accutest Job # JC1982

Client / Reporting Information

Company Name: CH2M HILL
Street Address: 119 Cherry Hill Rd, Suite 300
City / State / Zip: Parsippany NJ 07054
Project Contact / E-mail: Kyle Block Kyle.Block@CH2M.com
Phone # / Fax #: (617) 626-7013
Sampler(s) Name(s) / Phone #: A. Vardenade 201 532 2885

Project Information

Project Name: Quanta Resources Superfund Site
Street: 163 River Road
City / State: Edgewater NJ
Project #:
Client Purchase Order #:
Project Manager: Kyle Block

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Total VOCs	Total SVOCs	Total Pesticides	TCLP VOCs	TCLP SVOCs	TCLP Pesticides	TCLP Metals	PCBs	Ignitability, Corrosivity, Reactivity	Total Metals	LAB USE ONLY
1	IDW-SO-1-081915	3868/3868	8/19/15	10:30	AH	Soil	6					3	2	1		X	X	X	X	X	X	X	X	X		E2
2	IDW-SO-2-081915	3869/3677		10:45			6					3	2	1												A13
3	IDW-SO-3-081915	3740/3679		11:00			6					3	2	1												G29
4	IDW-AQ-081915	~~3685~~ 3681 (MH)		11:15		Aqueous	9	3		1		5				X	X	X					X	X	X	V979
																						(AH)				D38
																										D3374
																										4J2
																										14R3
																										4948

INITIAL ASESSMENT SA JK

LABEL VERIFICATION NL

D.I. slurry voc vials frozen storage
Date: 8/20/15 Time: 16:56 Initials: NL

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other _____

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [x] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [x] EDD Format Excel
- [ ] Other _____

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Hardcopy data package is required for landfill documentation

* 2 x 300 mL PEST/PCB 8/20/15

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	[signature]	8/20/15 1328	[signature]	[signature]	8/20/15 1503	[signature]
2						
3						
4						
5						

Custody Seal # None — Intact / Not intact — Preserved where applicable: JK — On Ice: JK — Cooler Temp: 2.7° CIP

JC1982: Chain of Custody
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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JC1982 **Client:** **Project:**

Date / Time Received: 8/20/2015 3:03:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.7);

Cooler Temps (Corrected) °C: Cooler 1: (2.4);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
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F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JC1982: Chain of Custody
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